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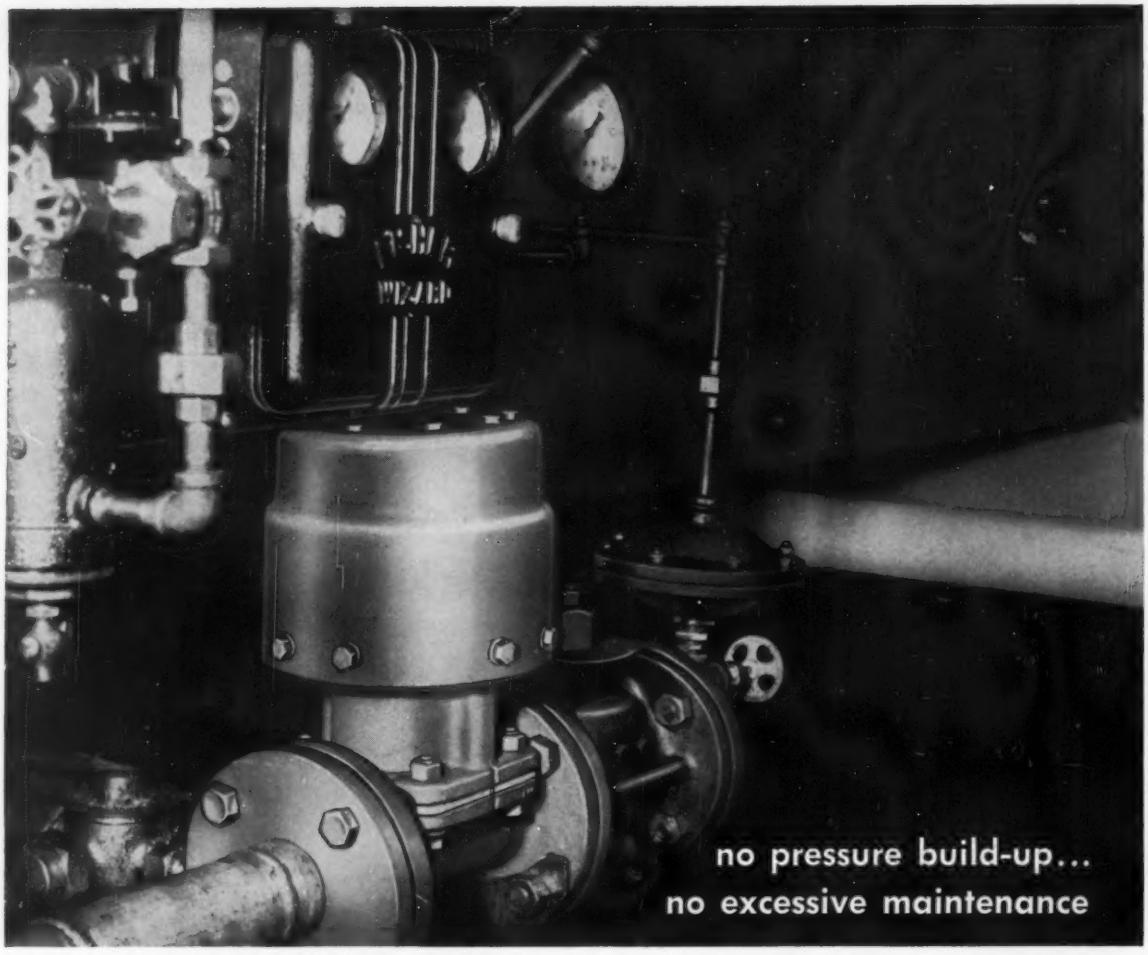
DECEMBER 1958

$1.00

FOOD ENGINEERING

FOR MANAGEMENT IN MANUFACTURING, PACKAGING, MARKETING

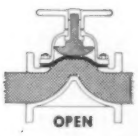
A McGRAW-HILL PUBLICATION



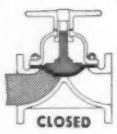
POWER-OPERATED

GRINNELL-SAUNDERS DIAPHRAGM VALVES

At the Oakland, California plant of Sunshine Biscuits, Inc., basement storage tanks are used to stockpile syrup concentrate. The syrup is then pumped to processing units on floors above. ✓ ✓ ✓ To keep pressure from building up when some of these units are shut down, a portion of the syrup must be bypassed back to the storage tanks. The amount of syrup returned must be carefully controlled, in order to keep a constant pressure at units in operation. ✓ ✓ ✓ Power-operated Grinnell-Saunders Diaphragm Valves, equipped with pilot controls, were selected for this service. This combination precisely interprets physical pressure conditions in the main line to within 1% to 10% of controlled line pressure. Other reasons for the selection of Grinnell-Saunders Diaphragm Valves are:



Diaphragm lifts high for streamline flow in either direction. No irregular surface to trap deposits.



Diaphragm seals tight for positive closure, even when handling viscous or fibrous materials.

EASE OF MAINTENANCE — Because the diaphragm is the only part of the valve that ever needs replacement, maintenance is at a minimum. In the case of Sunshine, diaphragm replacement occurred only once in 7 years.

ISOLATION OF WORKING PARTS — The diaphragm completely isolates working parts, preventing clogging of valve mechanism by the syrup, as well as eliminating possible abrasion of working parts by syrup crystals.

NO PRODUCT CONTAMINATION — There are no pockets to trap syrup, eliminating the threat of product contamination.

POSITIVE CLOSURE — The diaphragm seals tightly against the valve weir for a positive closure, even when handling viscous or fibrous materials.

For details about Grinnell-Saunders Diaphragm Valves, their operation and service record, write Grinnell Company, Inc., Providence 1, R. I.

Grinnell Company, Inc., Providence, Rhode Island • Coast-to-Coast Network of Branch Warehouses and Distributors

pipe and tube fittings • welding fittings • engineered pipe hangers and supports • Thermolier unit heaters • valves
Grinnell-Saunders diaphragm valves • pipe • prefabricated piping • plumbing and heating specialties • water works supplies
industrial supplies • Grinnell automatic fire protection systems • Amco air conditioning systems

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FOR MANAGEMENT
DECEMBER, 1958
30th YEAR
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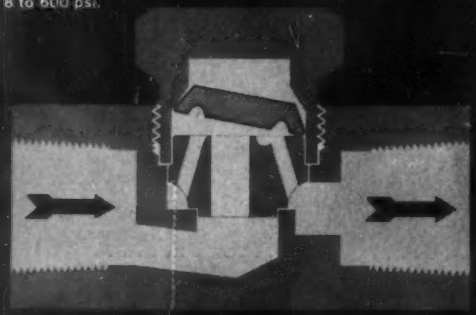
NEW YARWAY IMPULSE* STEAM TRAP ENGINEERED FOR YOUR LIGHT LOAD REQUIREMENTS

YARWAY NO. 30

Actual size new Yarway No. 30 (½" size). For all pressures 8 to 600 psi.



Cross-section Yarway No. 30 shows lever-valve in open position.

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  - **Quieter operation due to lever action**
- **Economy of Maintenance**
  - **Replaceable valve-seat assembly**
  - **One moving part**
  - **Stainless steel construction**

Put this trap on tracer lines, steam line drips and other light load applications. Order from your local Yarway distributor.

For free bulletin, write Yarnall-Waring Company, 100 Mermaid Ave., Philadelphia 18, Pa.

*IMPULSE . . . A COMPLETE LINE OF STEAM TRAPS, OPERATING ON A PROVEN THERMODYNAMIC PRINCIPLE.

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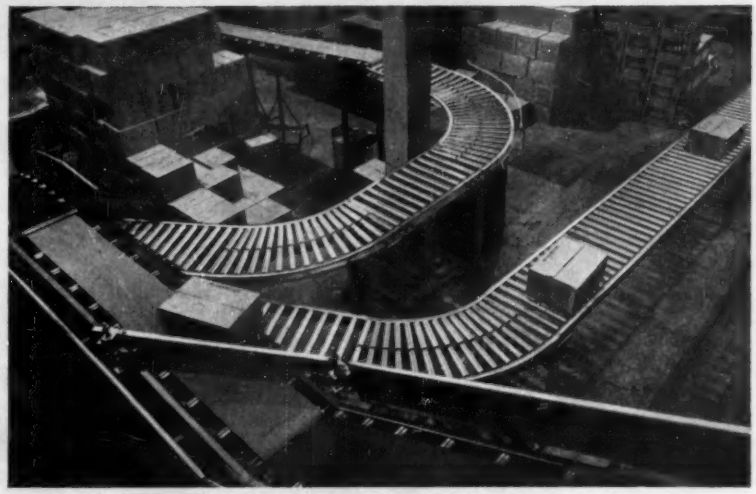
Ask Standard ... how to cut costs with conveyors



Order picking is expedited and simplified by this Standard system of roller and belt conveyors in large warehouse.

Roller and belt conveyors ease warehouse traffic jams

FAST flow of goods and simplified labor add up to more profitable warehouse operations.

Standard offers a wide variety of gravity and powered, permanent and portable conveyors — that can help you establish smooth, more profitable warehousing.

Spend a few moments with a Standard engineer. He'll show you how inexpensive Standard conveyors give you maximum flexibility at minimum cost. He'll show you, too, how Standard conveyors provide the many advantages of a custom-designed system at low cost. For the name of your nearby Standard engineer write STANDARD CONVEYOR COMPANY, General Offices: North St. Paul 9, Minn. Sales and Service in Principal Cities.

(LEFT) Belt-booster in a gravity roller conveyor "order picking" line. (RIGHT) Lift or lower floor-to-floor with an INCLINEBELT. Available in a wide range of heights and belt widths.

Write for Bulletin 309. Address Dept. D-12, or contact the Standard engineer listed in your classified phone book.

Standard 50 years of conveyor experience
GRAVITY & POWER
CONVEYORS

Gentle as a to baby foods

fmc Hi-Pressure steam peeler

Three FMC Steam Peelers prepare a variety of fruits and vegetables for baby foods at Beech Nut's San Jose, California plant.

LOOSENS FRUIT AND VEGETABLE SKINS FAST WITH MINIMUM HEAT PENETRATION TO THE PRODUCT

No harsh chemical solutions used with this equipment! Products are simply exposed to steam under pressure (up to 120 P.S.I.G.), and in a matter of seconds even the toughest skins are uniformly loosened, making skin elimination easy, fast and thorough. There's no damage to the tender subsurface nutritional layers of the product, no excessive product waste.

Built for various capacity requirements up to 10 tons per hour, the FMC Steam Peeler increases yield by 7% to 10% or more, at the same time doing away with the high cost and disposal problems associated with chemical peeling. Such fruits and vegetables as pears, peaches, apples, carrots, beets and potatoes are gently and efficiently processed in continuous, automatic operation.

Full information is contained in our "Steam Peeler Facts" Bulletin, Volume 5, No. 2. Write for your copy today, or call your nearest FMC representative.

Putting Ideas to Work

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TRENDS & FORECASTS

SPECIAL
FOOD
ENGINEERING
SERVICE to
EXECUTIVES

Continuing its dynamic trend, the food and beverage industry plans a 10% increase in capital expenditures in 1959—to $813 million. Of this, $612 million will be spent by food plants, $201 million by beverage firms. For all manufacturing, capital investment will be 3% less, a survey by McGraw-Hill's Dept. of Economics reveals.

Net income of 40 leading food and beverage firms gained 1% in 3rd quarter of '58, totaling $82.3 million. For first 9 months, net was $238.3 million, 1% less than in same period of '57, First National City Bank of N. Y. reports.

Expenditures for research and development are up 8.3% this year for 69 food and beverage companies, AMA study discloses. Average increase for all industries is 4%. In 1957, the 69 firms spent 1.2% of sales dollars for research.

Saving of $9 million to can users next year will come from price reductions by American Can, effective Jan. 1, as result of economies from handling tinplate in coils.

Cans will be priced f.o.b. at each of American's 68 plants, and prices will reflect freight savings for the plants nearer steel mills. Free delivery of cans in metropolitan areas will be eliminated. Can costs will be lower for most customers.

Unit charges involved in marketing foods were 5% higher in 3rd quarter of '58 than a year earlier, USDA reports. Further increase is forecast for 1959.

Demand for processed foods will continue to increase in the years ahead, buoyed by favorable economic factors and appeal of convenience foods, USDA forecasts. Food supplies will be larger next year than in '58 because of heavier stocks at the beginning of year and, if weather is average, large crops.

Some easing in retail food prices is in prospect for next year because of large supply, and prices to farmers are expected to be somewhat lower, USDA reports.

Sharp increase in pork processing in '59 is predicted on basis of large pig crops this fall and next spring. And beef cattle numbers are expected to increase further next year.

Fast-gaining chilled orange juice demand will hit 52½ million gal. in the '58-'59 season, Florida Citrus Mutual predicts. This represents more than 10 million boxes of oranges, compared to 9 million for past season and 4 million in '54-'55.

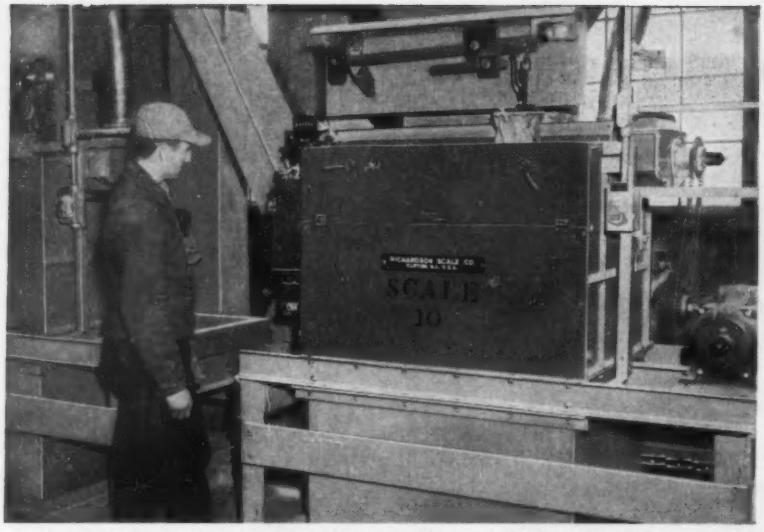
Florida's orange crop this season is forecast at 85 million boxes by USDA and 75 to 80 million by the industry. At the higher figure, total U. S. supply for '58-'59 will be 8% below recent years preceding the '58 freeze, according to Florida Citrus Commission.

Pack of canned sweet corn this year is 15% smaller than in '57, or 32,078,437 cases., NCA reports. With carryover, supply is off 14%.

See Developments to Watch p. 13

Up 9% over last year, margarine production for the first three quarters of '58 totaled 1,151,683,000 lb., a new record that outscores butter.

Frozen green pea pack this year is 15% less than in '57, totaling 250,692,510 lb., NAFFP reports. It is third largest pack on record.



Richardson Scales conform to U.S. Weights and Measures H-44 for your protection.

Where Richardson Bulk Scales are important to you... in terms of profit and loss

In your receiving department. Are you getting all the raw material you are paying for? Or are you paying for some lost in transit? With a Richardson Scale you know . . . and you only pay for what you actually receive.

In profit control. Weight "give-away," particularly of expensive ingredients in batching, can spell the difference between a profit-making operation and a losing one. Richardson Bulk Scales, accurate to ± 1 to 3 oz. can eliminate this problem, can help you make a better product at lower cost.

In your cost accounting department. With printed tickets showing the actual amounts received and delivered, cost control is no problem. Quickly and accurately you can plot your costs, with the weight tickets always available for double-checking or adjusting prices.

In batch proportioning and quality control. With Richardson Bulk Scales you eliminate costly errors in batching and delivery of various ingredients. Desired proportions are automatically maintained through thousands of hours of exactly repetitive operation. Not only is the result faster production, but production of consistent quality.

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For more information on Richardson Bulk Scales write today to

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Sales and Service Branches in Principal Cities
Also manufactured in Europe to U.S. standards

Trends & Forecasts

Schedule of Events

December

28-30—American Marketing Assn., annual conference; Morrison Hotel, Chicago

January '59

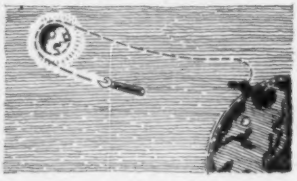
9-11—Western Frozen Food Processors Assn., annual meeting; Fresno Hazienda Motel, Fresno, Calif.
26-29—Plant Maintenance & Engineering Show; Public Auditorium, Cleveland.
26-29—Heating & Air-Conditioning Exposition; Convention Hall, Philadelphia.

February

13-15—Institute of American Poultry Industries, fact-finding conference; Municipal Auditorium, Kansas City, Mo.
20-23—National Canners Assn. and Canning Machinery & Supplies Assn., joint annual convention & exposition; Conrad Hilton Hotel, Chicago.

HORS D'OEUVRES

▶ Know what Moscovites call chocolate-coated ice cream on a stick? "Eskimo." Good Humor they never heard of.



▶ In opening food for the American table, can openers chew through half a million miles of tinplate a year. To the moon and back! There's a foodnik for you.

▶ U. S. women have 22% more children than a decade ago. In reporting this, the Census Bureau does not comment on the cause.

▶ An egg contains 10 essential amino acids, 4 unsaturated fats and fatty acids, 15 vitamins, and 14 minerals. The egg does come before the chicken.

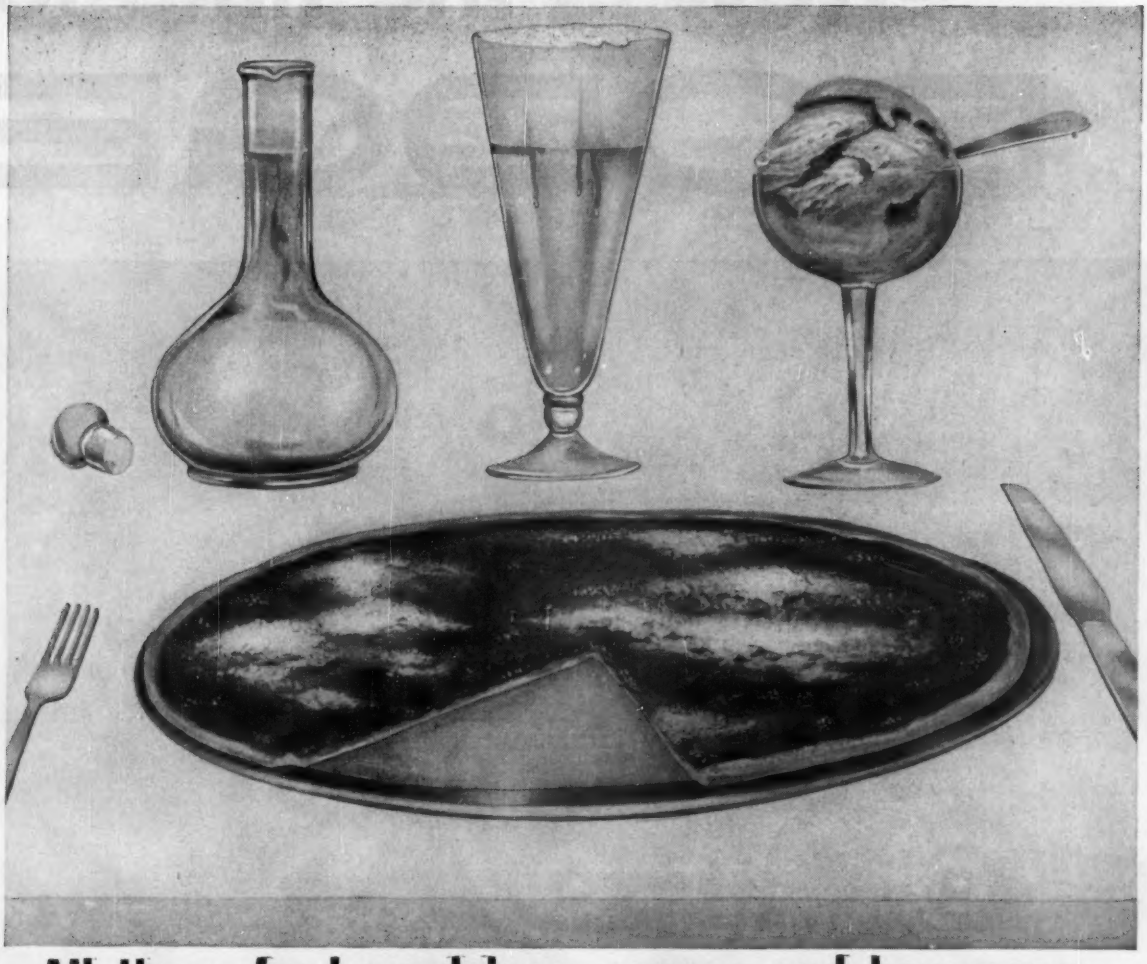
▶ Corn fermented in bins lined with air-tight polyethylene speeds pig growth. There's extra nourishment in bourbon-on-the-cob.

▶ America's father of canning, John L. Mason, invented the famous home-pack jar 100 years ago and died in a charity home 44 years later. His penniless finish many canners will understand.

▶ At the push of a button, an experimental electronic cook built by GE discharges food from a freezer into a radar range and has it ready to eat pronto. Now any bachelor's life can be 50% complete.

▶ Candy-coated tongue-depressors for children are used by a Los Angeles physician. But how does he look down a throat that's saying, "M-m-m-m-"?

What's different and better about these products?



All these food emulsions, sauces and beverages have been measurably improved by versatile and highly adaptable Kelco Algins!

KELCOLOID®

IN FRENCH DRESSINGS gives greater emulsion stability. Markedly increases shelf life. For Kelcoloid protects against body breakdown and separation even when dressings are subjected to high transit and storage temperatures, or refrigeration.

KELCOSOL®

IN FROZEN PIZZA PIE SAUCE assures a smooth homogeneous and attractive appearance when thawed. And, Kelcosol prevents moisture migration when sauce is frozen.

SHERBELIZER®

IN SHERBETS AND WATER ICES gives smoother texture, improved body and superior flavor release from fruit ingredients. With Sherbelizer you get measurably higher, more uniform overrun and faster freezing.

KELCOLOID O®

IN BEER produces a far more stable, far longer lived, creamier foam. A foam resistant to breakdown even in the presence of soaps, detergents or other residual fatty or greasy foam inhibitors frequently found on glassware.

Whether you make emulsions or suspensions, packaged dry mixes or beverages, sauces or syrups, if you have a product or processing problem, there is a Kelco algin to solve it. And, at your service are our highly qualified technicians, ready to give individual attention to your problems. Write or phone your nearest Kelco regional office today.

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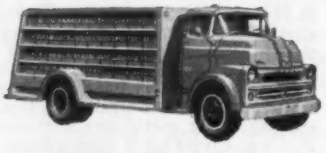
Now is the time to DODGE

New '59 Dodge Power Giants, "Job-Rated" for

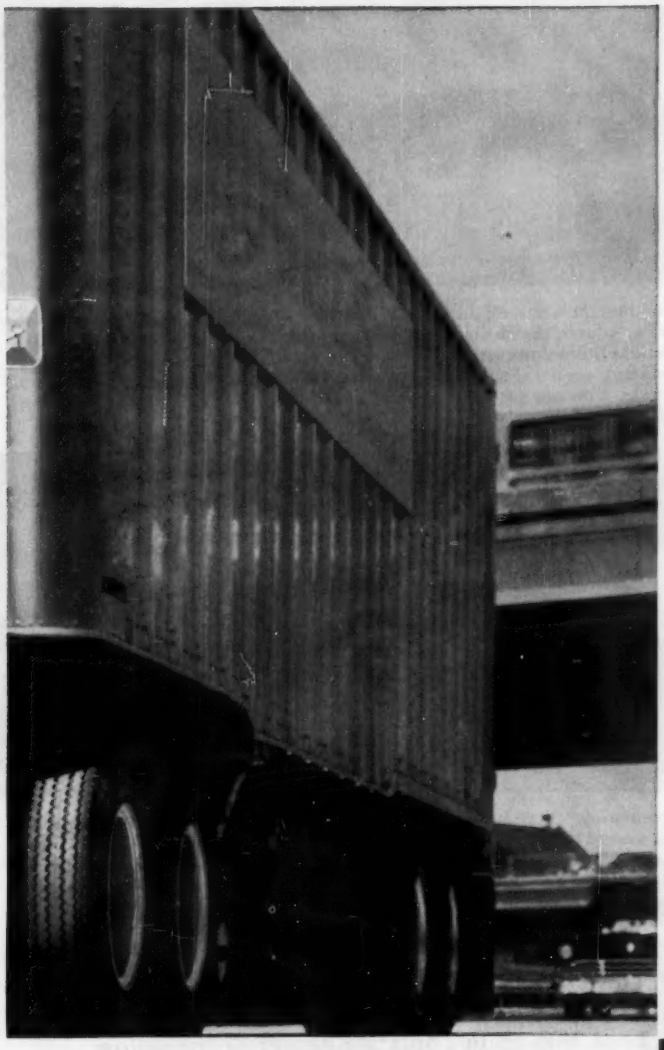
CONVENTIONAL Models 400, 500, 600, 700, 800, 900—G.V.W.'s to 30,000 lbs.; G.C.W.'s to 65,000 lbs.

TANDEM Models T700, T800, T900—G.V.W.'s to 49,000 lbs.; G.C.W.'s to 65,000 lbs.



C.O.E. Models C500, C600, C700—G.V.W.'s to 25,000 lbs.; G.C.W.'s to 50,000 lbs.

drive the new 1959 *Power Giant*



CHANGES . . .
WHERE THEY COUNT!
New performance!
New comfort!

Look into the cab—look into the chassis! Wherever you look in the new 1959 Dodge trucks, you'll find changes that *mean something*. New convenience, for instance, in suspended brake and clutch pedals, and hydraulically operated clutch. New heavy-duty electrical system. Greater dependability. Increased G.V.W.'s on tandems. Concealed running boards on medium-tonnage models.

You'll find new cab comfort, too, and better heaters. Plus new instrument panels designed especially for medium- and high-tonnage requirements.

Ask your dealer about all the new Power Giant advancements. And about the new network of Dodge Truck Centers that let him give quick delivery of any Dodge truck to meet your exact needs. Plus hurry-up parts service. See him soon!

★ ★ ★

Striking new Dodge low-tonnage models! This spirited new Sweptline Pick-up leads a complete line of new 1959 Dodge low-tonnage trucks. Advanced models for every need, from 5,100 to 10,000 lbs. maximum G.V.W.

every trucking need

4-WHEEL-DRIVE Models W100, W200, W300, W300M, W500—G.V.W.'s to 20,000 lbs.

FORWARD-CONTROL Models P300 and P400 G.V.W.'s to 15,000 lbs.

TODAY . . .
IT'S REAL SMART
TO CHOOSE DODGE
POWER GIANTS

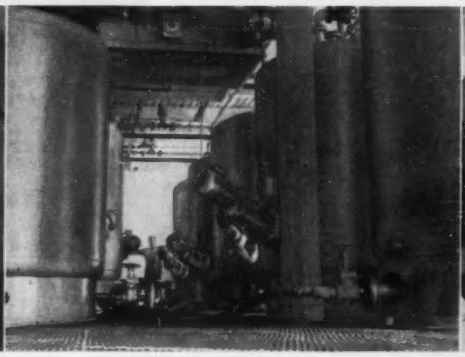
For more data, circle 252 on Reader Service Card

For more data, circle 253 on Reader Service Card →

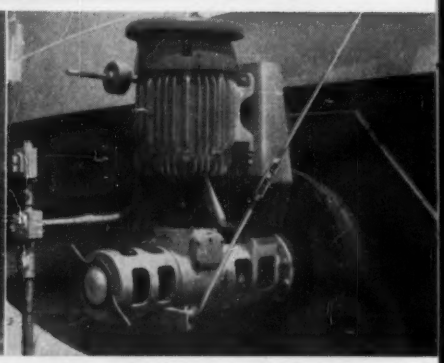
What's keeping you from getting TOP MIXING RESULTS?

Many things determine how well you mix fluids.
Here's a quick review of main points to watch.

1. Mixing pattern? Be sure it's fitted to your process. A vortex like this is good if you're wetting powders; not so good for other mixing jobs. To get competent suggestions on the *right* mixing pattern, call in your experienced LIGHTNIN Mixer representative.

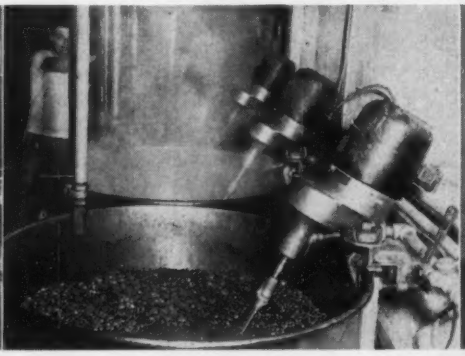


2. Tank shape? For best possible mixing, experts recommend a "square" batch (tank height equal to diameter). But don't let that stop you from going to a special shape if it will help your process. You can get excellent mixing in *any* tank with LIGHTNINS.



3. Batch size? You can mix even the biggest batches to uniformity with LIGHTNINS. For example, this LIGHTNIN Side Entering Mixer produces full uniformity in several million gallons of oil in about two hours, utilizing only 25 horsepower.

4. Changing requirements? Build versatility into your mixing line—with LIGHTNIN Portable Mixers. You can always expand at low cost by adding a unit. Careful selection can also enable you to adapt the LIGHTNINS you buy now to other jobs later on.



5. Hard-to-handle materials? You can mix fluids up to many thousand centipoises viscosity with LIGHTNINS. Handle heavy suspended solids, pulps, fibers, fine powders. Special impellers give you wide choice of cutting, beating, whipping, other effects.

6. Impeller size and speed? These determine *flow* and *turbulence* in the batch. To get the just-right balance of both requires intimate knowledge of impeller characteristics. MIXCO has this knowledge—and uses it to give you optimum results.

You're sure about results when you mix with LIGHTNINS. Every LIGHTNIN Mixer is guaranteed, unconditionally, to do the job for which it is recommended. For prompt service on fluid mixing, just call your LIGHTNIN representative. Look him up in Thomas' Register or the yellow pages of your telephone directory. Or write us direct.

WHAT SIZE AND TYPE of mixer do you need? Check here for latest bulletins giving full description, packed with helpful facts on mixing:

- ☐ Turbine, paddle, propeller types; top or bottom entering: 1 to 500 HP (B-102)
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- ☐ Laboratory and small-batch production types (B-112)
- ☐ Condensed catalog showing all types (B-109)
- ☐ Quick-change rotary mechanical seals for pressure and vacuum mixing (B-111)
- ☐ Data sheet for figuring mixer requirements (B-107)

Check, clip, and mail with your name, title, company address to:

MIXING EQUIPMENT Co., Inc., 143-N Mt. Read Blvd., Rochester 3, N.Y.

In Canada: Greey Mixing Equipment, Ltd., 100 Miranda Ave., Toronto 19, Ont.

Lightnin® Mixers

MIXCO fluid mixing specialists

DEVELOPMENTS TO WATCH

SPECIAL FOOD SERVICE to EXECUTIVES

Seven boil-in-bag precooked frozen vegetables, in cheese and cream sauces, are being introduced by Seabrook Farms. Packed in Mylar-polyethylene bags, these convenience items may be answer to slow gain of frozen basic vegetables. Boil in bag feature avoids loss of nutrients for added appeal.

Flavored icicles in various colors are packed for children in new 4-unit polyethylene package developed by DCA Food Industries. Film is perforated between icicles for easy separation, and peels down to expose product. Package is formed, filled, and sealed by special machine, at high speed.

Fresh fish fillets will be sold in vacuumized flexible film package in Canada. Shelf-life is said to be several times longer.

Lock-tight key-opening cans are being used for export cereals by Quaker Oats. Canco container lid has five lugs that lock under collar on turning.

Aluminum cans are being tested for potted meat and frozen concentrated orange juice. Machines to form trays from aluminum roll sheet stock and to insert foil liners and seal to cartons are being developed by Reynolds. Boilable foil pouch for baby foods is said to be technically OK.

Sweeter ice cream is preferred, and will command higher price, according to research by U. of Calif. scientists. Preference is for 17 to 19% sugar content, instead of customary 15%. More than 6,000 tasters were involved.

Dry whole milk crystals that reconstitute readily in water have been produced experimentally by USDA researchers. As yet, shelf-life is only 2 or 3 months. Also, crystals are bulky and must be nitrogen-packed.

Continuous fermentation of beer has been achieved on laboratory scale by Britain's Brewing Industry Research Foundation. Method is 2½ to 6 times as fast as batch technique. When initial wort has fermented, fresh is added at constant rate and beer is drawn off at same rate.

Quick measurement of carcass quality of live beef animals by sonic reflectance looks promising, Iowa State reports. Sound waves reflect from each layer of tissue in the animal's body to "chart" structure.

Ratio of lean to fat in meat is continuously measured by a new scintillation counter and analyzer which identifies radio isotope and gages its intensity. Lean meat contains radioactive potassium; fat, none; bone, little.

Administration of adrenalin to animals prior to slaughter retards deterioration in storage by autolysis and microbial action, Batelle reports.

Faster method of removing hair from hides by soaking in enzyme solution after treatment in salt water is under development in USDA lab.

See Washington Report p. 17

Quick, accurate measurement of nitrogen in solids is achieved without a professional operator by nuclear nitrometer developed by Schlumberger.

Unitized loads of new glass containers are being handled without pallets by new technique. Bottom cases are spaced apart for forks of lift truck to be inserted, and top flaps are opened flat so as to overlap. Other cases are stacked on top. Flaps act as ties and support bottom cases during lifting.

FDA has established new position of Scientific Director to strengthen and coordinate its research. Biochemist Paul L. Day holds post.

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ATLENE *Lemon & Lime Shade*
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ATLENE *Root Beer Shade*
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"Custom Made" shades to
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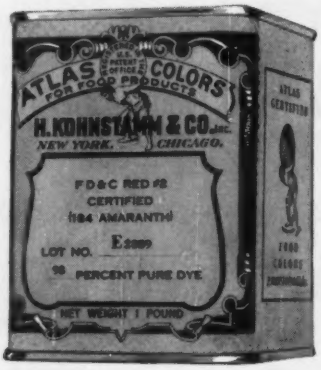

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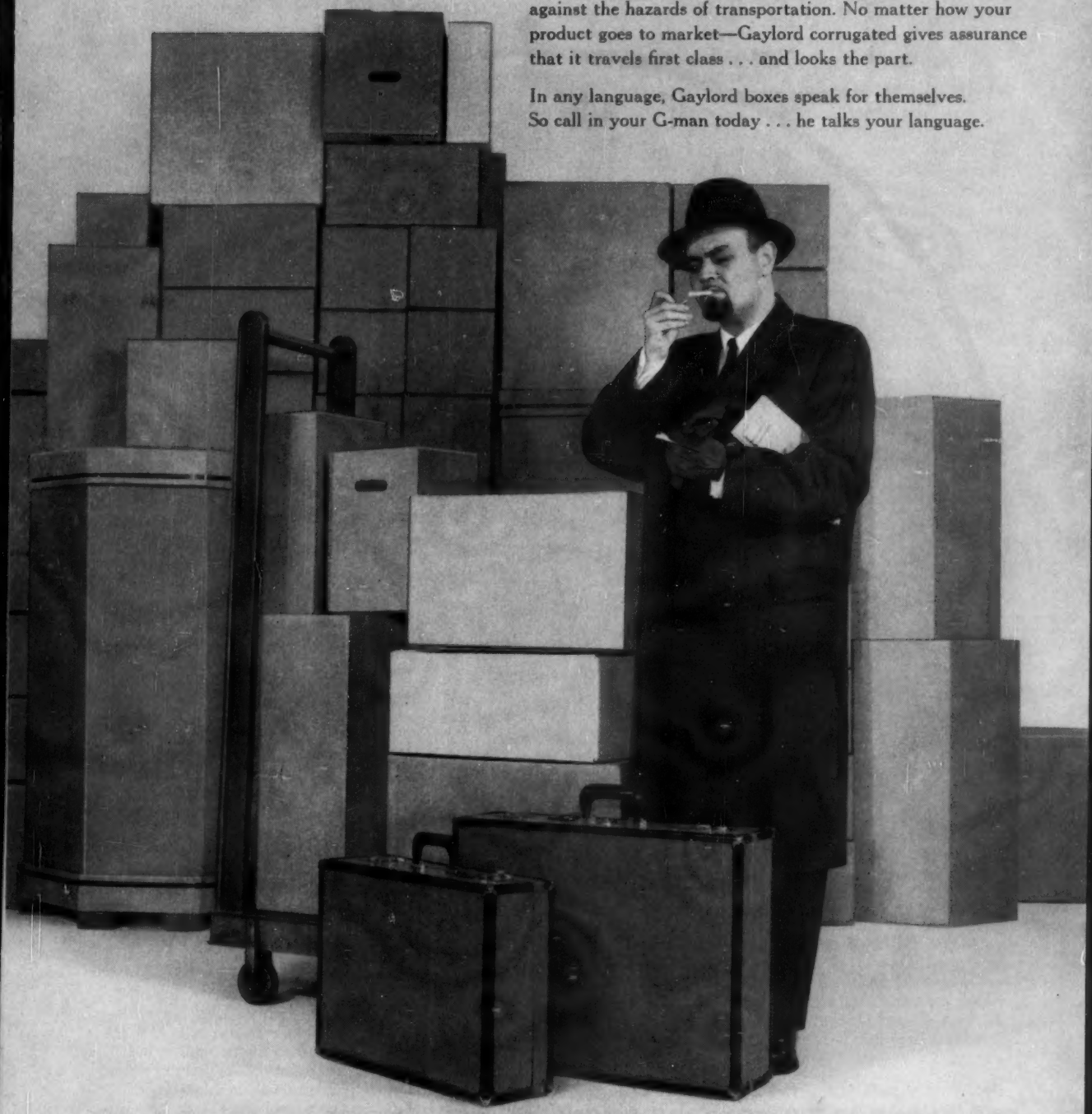
In any language, Gaylord boxes speak for themselves. So call in your G-man today . . . he talks your language.



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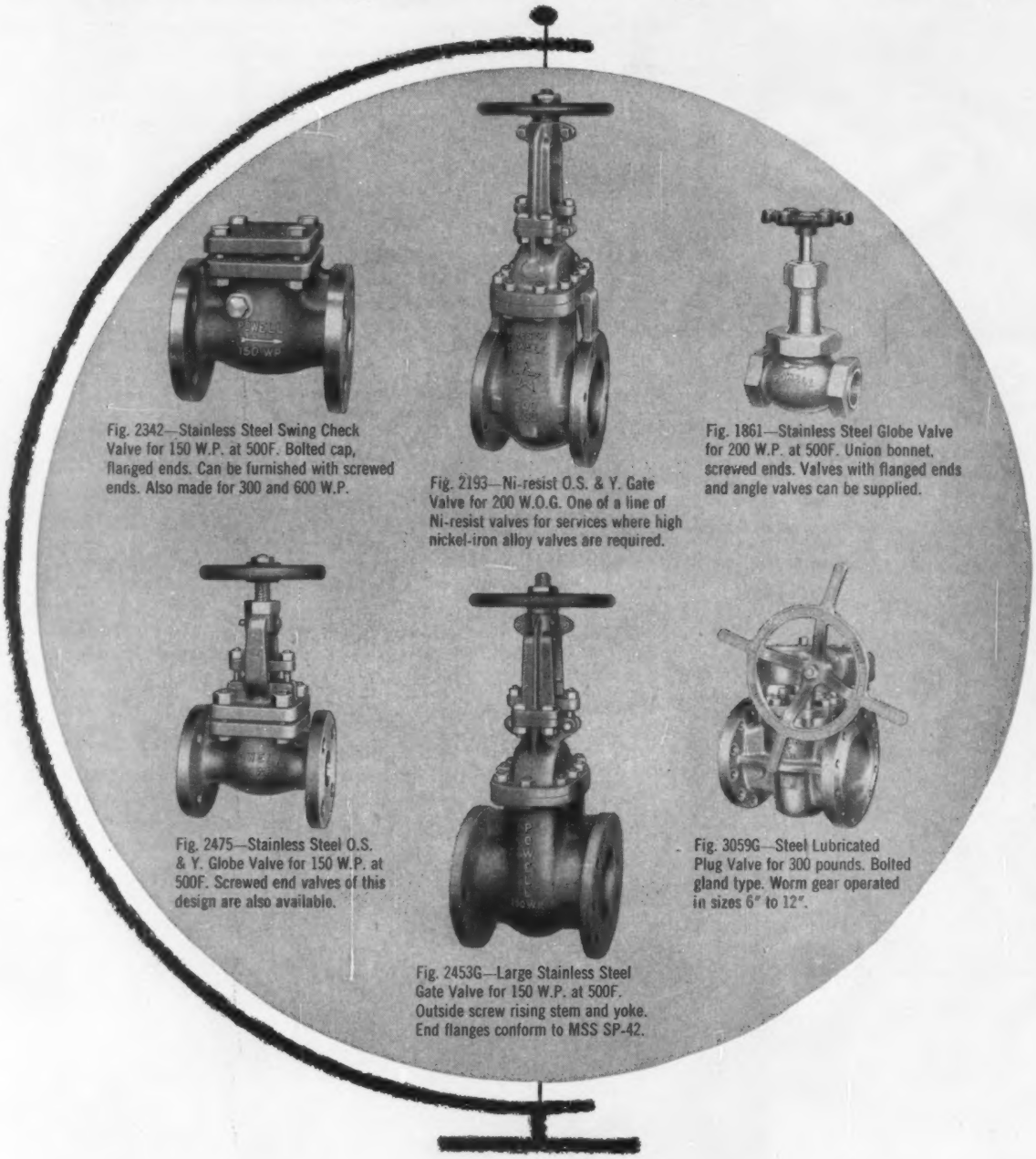

Fig. 2342—Stainless Steel Swing Check Valve for 150 W.P. at 500F. Bolted cap, flanged ends. Can be furnished with screwed ends. Also made for 300 and 600 W.P.

Fig. 2193—Ni-resist O.S. & Y. Gate Valve for 200 W.O.G. One of a line of Ni-resist valves for services where high nickel-iron alloy valves are required.

Fig. 1861—Stainless Steel Globe Valve for 200 W.P. at 500F. Union bonnet, screwed ends. Valves with flanged ends and angle valves can be supplied.

Fig. 2475—Stainless Steel O.S. & Y. Globe Valve for 150 W.P. at 500F. Screwed end valves of this design are also available.

Fig. 2453G—Large Stainless Steel Gate Valve for 150 W.P. at 500F. Outside screw rising stem and yoke. End flanges conform to MSS SP-42.

Fig. 3059G—Steel Lubricated Plug Valve for 300 pounds. Bolted gland type. Worm gear operated in sizes 6" to 12".

FOR EVERY FLOW CONTROL PROBLEM Powell offers more kinds or types of valves, available in the largest variety of metals and alloys, to handle every flow control requirement. Your local valve distributor will be glad to tell you all about them. Or write to us for the full facts.

THE WM. POWELL COMPANY • *Dependable Valves Since 1846* • **Cincinnati 22, Ohio**

'59 Seen Bright for Processors . . .

Next year's business will be most cheery for the food manufacturer!

This was the consensus as top economists, attending USDA's annual Outlook Conference, forecast a broad increase in use of processed foods.

The rise is seen continuing, largely as a result of these three factors:

1. Further migration of the farm population to the cities. 2. A further growth in number of women working outside the home, thus boosting demands for convenience foods. 3. Generally rising incomes of workers.

. . . With Contrasts in Overall Picture

However, the economists saw the coming year marked by a number of sharp contrasts.

While profits of processors will continue rising, farmers incomes will contract. Processing costs will maintain their upward march, but costs to consumers will be somewhat lower.

At the same time, consumers will be spending more on food as farm output sets a new all-time high.

Relative to food processing and marketing, the economists envisioned a broad and profitable sharing by these fields in an overall U.S. business advance in '59. But they see farmers suffering from a combination of higher production costs and a cutback in Government subsidy checks.

Costs–And More Costs

Constant climb in the cost of processing and distributing foods was particularly cited in the Outlook session.

The national outlay for food marketing was put at $35.6 billion last year. More jumps followed early this year. And '58 third-quarter figures are gaged as running 5% over the same period of '57.

Also, the bill for labor rose 4% in the period, though added productivity offset this to some extent. Outlook is for further wage hikes as the economy improves.

Further item is upped transportation cost resulting from the boosted RR freight rates (FE Oct., p. 21). Higher levies by motor carriers and water shippers have followed.

Humphrey to Lift Haze From Probe

Questions are popping as to just where and how FTC will dig in its probe of "concentration of power at the retail level" (FE Nov., p. 21).

FTC has said its checkup will concern manufacturers "where their activities bear on retailing"–hence industry's interest in "knowing the range."

More light on the matter is looked for on Dec. 13, when Sen. Hubert Humphrey will deliver a talk on the investigation before the National Food Brokers Assn.

As chairman of the Senate Subcommittee on Retailing, Distribution, and Fair Trade practices, Sen. Humphrey has been prominent in sparking the action.

FTC's Bureau of Economics will handle the probe, which is seen being primarily "factual" rather than "recommending" in nature.

Speed Humane-Slaughter Methods

Efforts in the crash-plan manner have been called for to push development of improved methods of stunning and anesthetizing animals prior to slaughter.

The range-finding for accelerated action came in last month's groundwork-laying meeting of the 12-member advisory committee serving USDA relative to administering the new Humane Slaughter Law (FE Oct., p. 21). Mar. 1 is the date for designating the methods (to be effected by July 1, 1960).

Word comes meantime that FDA has now approved use on animals of a tranquilizer (Diquel, Jensen-Salsbery Labs., Inc.) up to 24 hr. before slaughter. Tests indicated that the impractical 72-hr. limit (set to curb danger of residues in the meat) could be shortened.

Buy Now for 20% Tax Break

You'll get that new-equipment tax break quickest if you put through your purchases before Jan. 1. Then the flat 20% first-year depreciation deduction will apply directly on your '58 return. Further tip: Since write-off is against a limit of $10,000, it will pay you to spread a $20,000 purchasing project between this month and next (1959)–thus deducting on full amount over two returns.

BRIEFS

That big gamma-ray food irradiator slated for Army's Ionization Radiation Center at Lathrop, Calif., will be designed, built, and test-operated by Curtiss-Wright Corp.–which got nod over 14 other bidders.

Starting sugar quota for '59 is seen hitting above 9.0 million tons. Contrasting with 8.8 beginning figure of '58, this upswing would please big users, who favor larger supplies for their price-braking effect.

First application for approval of an additive under new law has been received by FDA. Portended for Agency is heavier workload requiring deficit spending prior to voting of additional operating funds.

"Quackery involving false and misleading claims for a great variety of vitamins, minerals, and other food supplements" is newly targeted by HEW Secretary Flemming, who estimates it as a $500-million annual racket. His Department joins American Medical Assn. and Better Business Bureau in drive to educate public against such peddlers. Theme: A symptom of ill health is a matter for a physician–not a food faddist or quack.

Effects of fat in human diet will be sharply researched by USDA's Food & Nutrition Advisory Committee. There is growing concern over the many people who give up fats when they don't have to–while really needing them for proper nutrition. Says one official: "There has been too much promotion about the subject and not nearly enough facts."

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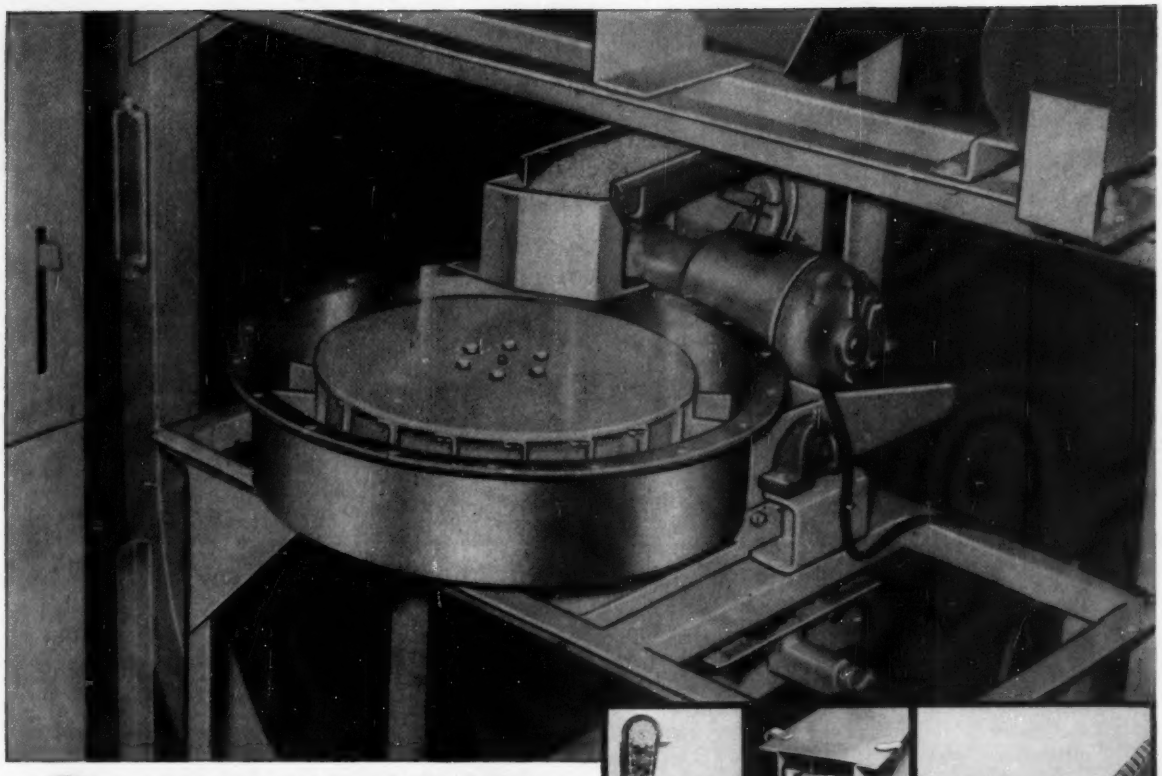
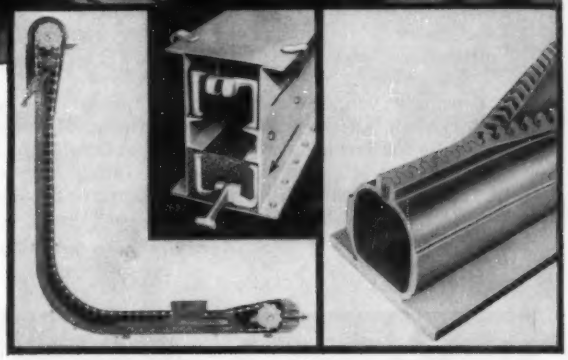
For more data, circle 257 on Reader Service Card



S-A CONTINUOUS WEIGHER PROVIDES EXTREME ACCURACY!

The STEPHENS-ADAMSON Continuous Weigher weighs material continuously while in motion with extreme accuracy. Material entrance and exit points are in line with pivot axis of weigher providing for easy installation within existent processing operations and completely eliminating all discharge terminal errors. The unit handles hot material with equal accuracy. Minimum headroom is required. The weigher can be adapted with control equipment for accurate gravimetric feeding without requiring extensive plant alterations. STEPHENS-ADAMSON engineers will be happy to work with you on automating your processing operations.



S-A REDLER CONVEYOR

Skeleton flights, linked together and moving through totally enclosed casings, induce the mass movement of powdered, granular or flaky bulk materials in any direction. Gentle conveying action and sealed casings mean maximum protection for materials handled. Redler units combined with Continuous Weigher offer automatic operation.

S-A ZIPPER CONVEYOR

Literally a moving, material-carrying conduct, the zipper closed belt, conveyor-elevator is capable of transporting bulk materials in any plane, to considerable heights and around obstructions. Bulk materials are conveyed free of breakage, agitation or segregation within the sealed and dustight belt. The zipper combined with Continuous Weigher is ideal for automatic feeding operations.

Write for the following bulletin:

Continuous Weigher Bulletin 958
Redler Conveyor Bulletin 556
Zipper Conveyor Bulletin 349

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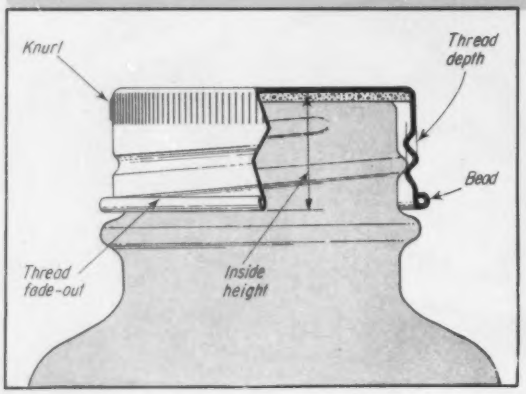
NEW PACKAGES & PRODUCTS



Cap Features Kink-Free Bead

Armstrong Cork Company has introduced a metal cap that offers distinct advantages to packagers.

The closure has a tightly rolled, kink-free bead, a deep smooth thread that allows snug thread-to-glass contact for the entire length of the thread, and a fine knurl improved in appearance and chip-resistant.

Improved caps are available in the 22, 24, 28, 30, and 33 mm. sizes.

Especially designed metal cap equipment has an exclusive new beading process that rolls the beads tighter and tucks the raw metal edge in more securely, providing a stronger bead and freedom from rusting. The result is a cap that won't bend during shipping or capping and will take greater torque on high-speed packaging lines.

Circle 1 on Reader Service Card

Rye Bread in Plastic Film

First bakery item to be packaged in Continental Can Company's Conolex is Swan's Holsum Rye. Swan Bros. is using a 12 oz. bread bag made of the clear linear polyethylene film.

The bags are being evaluated in a ¾ mill thickness against conventional polyethylene bags also supplied by the supplier in 1¼ mill thickness.

Receptiveness to fine printing is demonstrated on the rye bread package which is printed in three colors.

While results of the test are not as yet conclusive, the bakers have been favorably impressed with the surface gloss, clarity and savings possible with the Conolex bags. Still pending in the test is the retail market reaction on shelf life and consumer preference.

Circle 2 on Reader Service Card

Family-Size Pack Spurs Sales

"No other item in our line has received such enthusiastic acceptance," reports Fulham Bros., Boston, packers of "Four Fishermen" brand. The center of consumer interest is the packers new 30-fishstick package.

Design was planned to emphasize the economy aspects of a large package. The colorful wrapper was designed and produced for the processor by Western-Waxide Div., Crown Zellerbach Corp.

Circle 3 on Reader Service Card

Reclosable Prepared Cereal Carton

Making its debut this month is a new reclosable package for Ralston Purina Co.'s Wheat and Rice Chex.

Designed by Michigan Carton Co., it features a die-cut tuck-in tab on the upper flap.

Adaptable for cereals, crackers, potato chips, and other foods where maintaining crispness is important, the package restores regidity and offers a tight closure.

Spot gluing and a roll-down waxpaper liner are additional features of the carton. **Circle 4 on Reader Service Card**

Borden Markets Non-Dairy Item

Two new instant food products will soon be moved into national distribution by the Borden Co., New York. The products are Instant Super Starlac non-fat dry milk, and Borden's Instant Whipped Potatoes. Market by market introduction is planned until full national distribution is achieved.

The new Instant Super Starlac involved different processing methods from its predecessor. Resulting product is "not only quicker than instant but has, according to tests, a better flavor than any similar product."

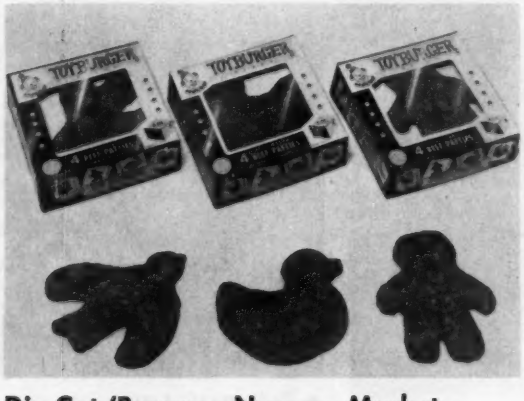
The instant whipped potatoes evidence a sharp departure from the Borden established product line, though evolving from what the company proudly refer to as "A century of experience in dehydration and convenience foods."

Popular Produce Packages

Two new produce packages recently introduced by the Triple M Packing Corp., Philadelphia, are reported to have proven so popular with supermarket customers that the Packing Company has been hard pressed to keep up with orders. Packages consist of Idaho potatoes or Delicious apples in an overwrapped tray.

The Idaho potato package was designed by Triple M in conjunction with Standard Folding Trays Corp. The brown, yellow and white tray holds four potatoes, an ideal serving for the small family. The apples are packed six to a stock tray.

Both packages are overwrapped with cellophane and a Model U-6 Wrapper at the rate of approximately 25 trays per minute. Cellophane is supplied by American Viscose Corporation. **Circle 5, on Reader Service Card**



Die-Cut 'Burgers Now on Market

"Toyburgers", an unusual new beef product, are distributed in New York State through Fairview Frosted Foods, Inc.

Four beef patties, totalling 8 oz. in weight, are die cut into a gingerbread man, a duck, an airplane, a bell, a bird, and other shapes.

The product is directed toward children and party-givers. Package is a printed blue and yellow window box overwrapped with cellophane.

Tight Reclosure for Key Cans

A reclosable top for key-opened cans has been developed by the American Can Co.

Five lugs extend from the inside of the recessed can top, fitting into small depressions in the collar of the can. A lock-tight reclosure is provided by pressing the lid into the top of the can and giving it a quarter turn clockwise.

The feature was developed for Quaker Oats Company for export use. **Circle 6, on Reader Service Card**

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RUST-PROOFED . . . by zinc plating, Darnell Casters give longer, care-free life wherever water, steam and corroding chemicals are freely used.

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"Ten Free Cups"

A unique "bonus jar" with an outside neck containing enough instant coffee for ten "free" cups is the basis for a new Nescafe promotion.

Offered in key cities, the jar is designed to attract coffee drinkers to the pleasures of Nescafe through the bonus quantity rather than through the customary off-label price reduction.

In the guarantee printed on the neck band of the jar, the new user is requested to try the ten extra cups and if dissatisfied to return the rest of the jar for his money back.

"Stickless" Icicle Marketed

"Just peel it and eat it" are the instructions for enjoying new Gold Mine Icicles. Unique feature of the water ice is that there is no stick in the frozen confection. The icicles are frozen in a long pouch, 10 in. long and 2 in. wide.

A multiple package consisting of four pouches (each a different flavor) attached by perforated sides makes an ideal Supermarket take-home package.

Icicles are made and packaged on a new machine designed by DCA Food Industries, Inc., New York.

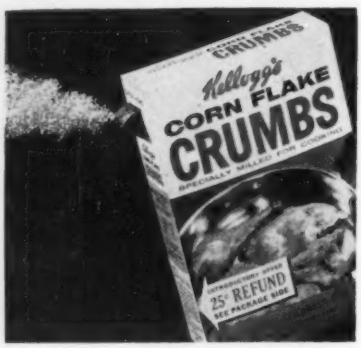
Circle 6 on Reader Service Card

New Product—New Package

A bright new package is heralding Hershey Chocolate Company's new instant hot chocolate flavored drink. Enriched with whole milk the product now uses a cocoa base instead of a liquor chocolate base.

Only water is added to the product to prepare the drink.

The product is marketed in 12 and 1 oz. packets of white bond lined with wax laminated amber glassine. The bag is brightly printed in red, white and maroon.



Ready Rolled Flakes

For years recipes have been calling on the housewife to add "rolled corn flakes". Now Kelloggs has met the demand with Kelloggs corn-flake crumbs.

The convenience item consists of freshly milled and specially processed corn flakes for crumb coatings.

Product is packaged in a 9 oz. box with a handy pouring spout.

Riegel Announces NEW TRI-PLEX PAPER for Semi-Rigid Bags

Ask your bag supplier to show you this new packaging development

(RIEGEL DOES NOT MAKE BAGS)

Tri-plex is an unusual combination of three special Riegel packaging papers laminated together to form one sheet with superior rigidity for high speed production of semi-rigid bags. It's a brand new Riegel development, ideal for things like cookies and crackers. Makes a fine protective bag that stacks well and holds its shape. Excellent grease-proofness. Shortening will not wick through seams, folds and creases. High moisture protection keeps cookies crisp longer.

Riegel's Tri-plex has an excellent white surface for fine printing results. Bags can be supplied with heat-sealed closures. We believe Tri-plex now provides your bag maker with a truly superior material . . . at an attractive price.

BAGS DESIGNED AND MADE BY PARAMOUNT PACKAGING CORP., PHILA. 32, PENNA.

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A HEALTH *plus* ON YOUR LABEL

● Every meal she sets on her table must meet two basic requirements . . . it's like second nature to her: a meal must be *appetizing* and *health-providing*. With these goals in her subconscious, what happens in the store?

The grocery store is the proving ground of competition. *Hundreds of powerfully advertised brand names compete for her favor,* for her judgment of what will provide appetizing, health-providing meals. That's when your food product needs *a plus on the label,* a signal to her health-consciousness!

"Vitamin Enriched," "Vitamin Fortified." Those signals, those words can make a big difference today in moving *your product* to her table. Why not let a Pfizer representative tell you *in his words* the full details on how Pfizer vitamins can significantly increase your product's sales potential. Pfizer has been a major vitamin research and production center since the first vitamin was commercially produced.

Here are just 3 examples of food products that are increasing sales with Pfizer vitamins:

A health plus on the label of carbonated beverages says "Vitamin C Fortified" (and means sales). You can add the full daily requirement of Vitamin C for less than 1½¢ per case of 24, 12 oz. bottles.

Pfizer experience can help you put the health

MOVES PRODUCTS TO HER TABLE

A health plus on the label of flour, macaroni and similar products says "ENRICHED" *(and means sales).* New light-color Pfizer BI-CAP is now simplifying the problem of enriching white flour for many millers.

A health plus on the label of canned juices and concentrates says "Vitamin Fortified" *(and means sales).* Fortification here will offset processing losses and seasonal variations in natural vitamins.

* * *

What's the most powerful *plus* you can offer the food shopper? It's those extra health words on your label. Let Pfizer help you put them there.

Quality Ingredients for the food industry for over a century

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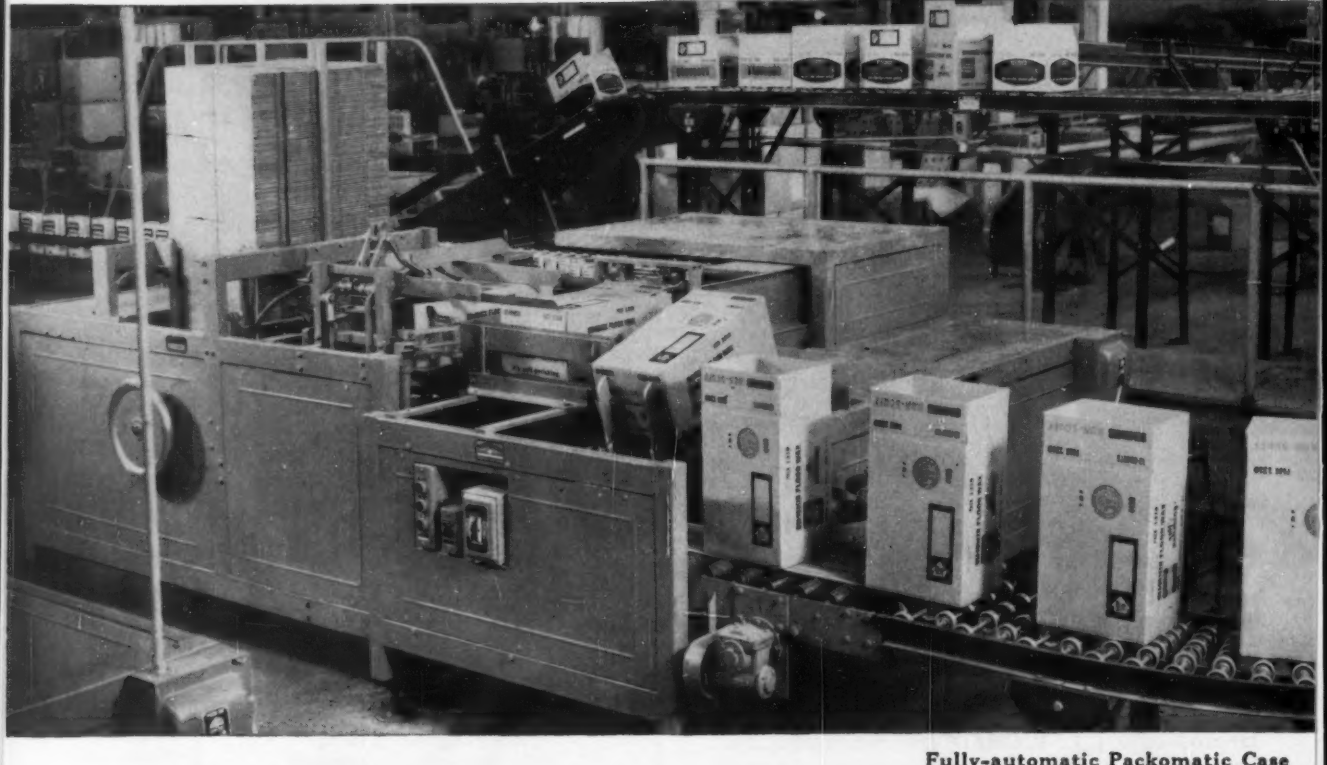

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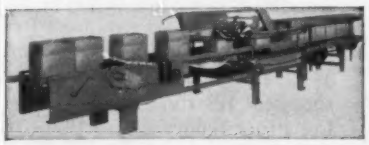

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In financial aid to education . . .

What Should Business Do Now?

Now that the federal government is entering the field, should business firms stop giving financial aid to our colleges and universities?

This question is now being discussed by business directors throughout the country. The discussion is prompted by the near-billion-dollar program of federal aid to education passed by Congress a few months ago. For if the federal government, with its access to billions in taxes, is assuming responsibility for the financial welfare of education, should not business get out of the way and let the government take over? This is the general way the question is being asked.

The answer is a resounding NO.

What The Federal Program Does

The new federal program makes it possible for the government to spend the imposing total of $900 million for aid to education over the next four years. There are still many loose ends in the program. But already it's quite clear what such funds will — and will not — do to help relieve the financial plight of our colleges and universities.

First of all, the program is not going to solve any financial problems in education overnight. The program is just barely underway. So far no money has actually been allocated, and Congress has appropriated only $40 million — less than 5% of the total.

More important, there is very little in the total program which will result in direct aid to colleges and universities. The program does set up fellowships to train college teachers. But most of the aid will eventually be channeled through the states to primary and secondary schools. The main focus of the program is education for national defense — strengthening science, mathematics and foreign languages in elementary and secondary schools, together with grants for counseling, testing and research.

The one big item for higher education is a $295 million student loan program, which will help needy students pay tuition and other fees. But tuition rarely covers the full cost to the college of educating a student. So the net result could well be an additional financial strain on our institutions of higher learning.

For the three most pressing financial needs — faculty salaries, scholarship grants and new plant and equipment—colleges and universities must still rely heavily on help from the business community. And it would indeed be a major

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misfortune if the recent actions of the government put a blight on this growing and substantial support to higher education.

In the last ten years, business has expanded its financial aid to education by more than four fold. In 1948, contributions were only $24 million. In 1957, such aid reached an estimated $125 million. Moreover, corporations have been putting a larger proportion of their total charitable gifts into education. In 1950, the percentage was only 17%. By pre-Sputnik 1956, the share had already increased to 34%, according to figures recently released by the Council for Financial Aid to Education.

Why Business Must Help

The most compelling reason for increasing business aid to higher education — at an even faster rate—is that our colleges and universities desperately need financial help. It is that simple. Private contributions to higher education must average at least $400 million over the next ten years if our colleges are to meet rising operating costs and raise faculty salaries to decent levels. Despite the growth in business contributions, we are still well below that goal.

If our colleges cannot solve their mounting financial difficulties through voluntary help from business firms, alumni and communities — then it is to be expected that federal aid ultimately will be mobilized in a big way. In principle, if not in dollars, the 85th Congress has paved the way. Indeed, a large federal scholarship program was squeezed out of this year's legislation only in the course of last-minute compromises. And Arthur S. Flemming, Secretary of Health, Education and Welfare, has urged that the next session of Congress restore the scholarship program.

About any federal rescue operation for higher education, two things are quite clear:

(1) **Such aid will come too late to prevent irreparable harm resulting from the current shortage of funds.** The need for help is urgent and immediate.

(2) **With federal taxes taking over half of all corporate income, any federal program in the end will be financed in large part by the business community.**

An Opportunity

So, viewed narrowly, it is in the selfish interest of business firms to aid our colleges and universities now, rather than wait and be forced to pay later on. By doing so, they ensure that business will have a continuing supply of well-trained graduates. They take advantage of the tax laws for charitable contributions which mean the government in effect assumes more than half the cost of business aid to education. And they win gratitude for a voluntary and generous act.

Viewed in the broad public interest, the business community has an opportunity to perform a financial rescue mission in education which could well be the key to successful survival, not only of our present system of higher education, but also of the nation itself.

As previous editorials in this series have pointed out, a very small share of the net income of business firms — about 1% — would do the job. Certainly business must not be distracted from this opportunity by the new venture of the federal government in financial aid to education.

This message is one of a series prepared by the McGraw-Hill Department of Economics to help increase public knowledge and understanding of important nation-wide developments. Permission is freely extended to newspapers, groups or individuals to quote or reprint all or parts of the text.

Donald C. McGraw

PRESIDENT

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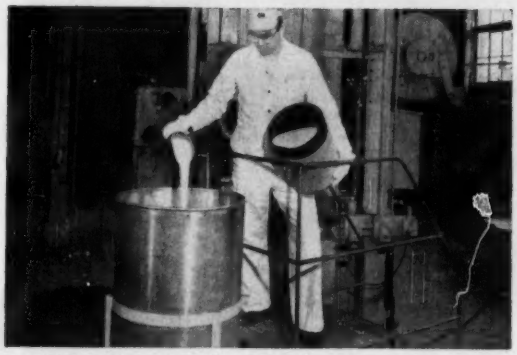

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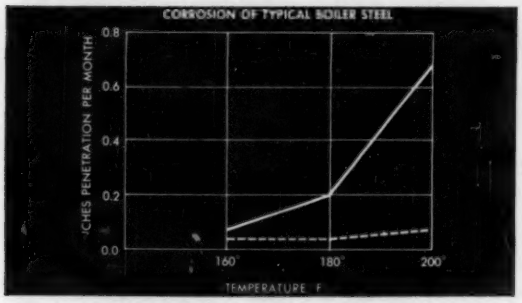

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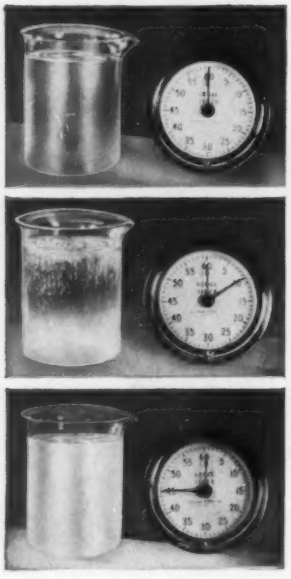

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POTENCY 250,000 USP Units per Gram.

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Top Executives Selling Modernization Short?

Positive thinking dominated talks and panel discussions at the recent annual meeting of Grocery Manufacturers of America. Top executives of pace-setting food manufacturing firms are enthusiastic about the dynamic progress in America's most important industry. And they foresee a great future.

They also recognize problems and challenges of no mean proportions. Trade practices, private labels, consumer education, trade relations, and more productive marketing are among them. These are approached with confidence and constructive ideas.

Defeatism detected on labor cost

But one senses a disturbing degree of defeatism in respect to rising labor costs and the ability of companies to absorb them through more efficient factory, warehouse, and shipping operations. It is suggested by some that the industry is nearing the point of diminishing returns on investment in modernization.

Creditable achievement in recent years is recognized and appreciated. The wage increases paid by grocery manufacturers and distributors from 1952 to '57 totaled $68 per family food basket. But new and better methods, stemming from capital investments, produced notable cost savings. So the industry absorbed $36 of the $68, or 53%.

There is no denying that food prices have been kept relatively low through investment in new plants and equipment—to the tune of about $800 million a year for the past several years. That is why food is a "good buy" today. That and low profit margins.

There is no doubt that new factories, completely equipped with the latest in labor-saving machinery, will be hard put to increase efficiency significantly in the immediate future.

There is no question that, in a few instances, food manufacturers are faced with diminishing returns on capital investment.

But no more serious mistake can be made by top executives than to assume that they are about caught up with modernization—that further substantial savings in unit labor costs are not now possible—that all attention now should be turned to streamlining marketing operations.

Over half the equipment in food plants is more than 10 years old, as pointed out in FE's Plan '59 issue (October, '58). And technical men in the industry appreciate full well the stiff price being paid for this obsolescence.

"Haven't seen anything yet" is right attitude

Many branches of our industry still are beginners in the art of highly-engineered efficient mass production. Too much food processing involves kitchen techniques on an inflated scale. Too many advances are achieved by piecemeal mechanization and automation of basically crude operations.

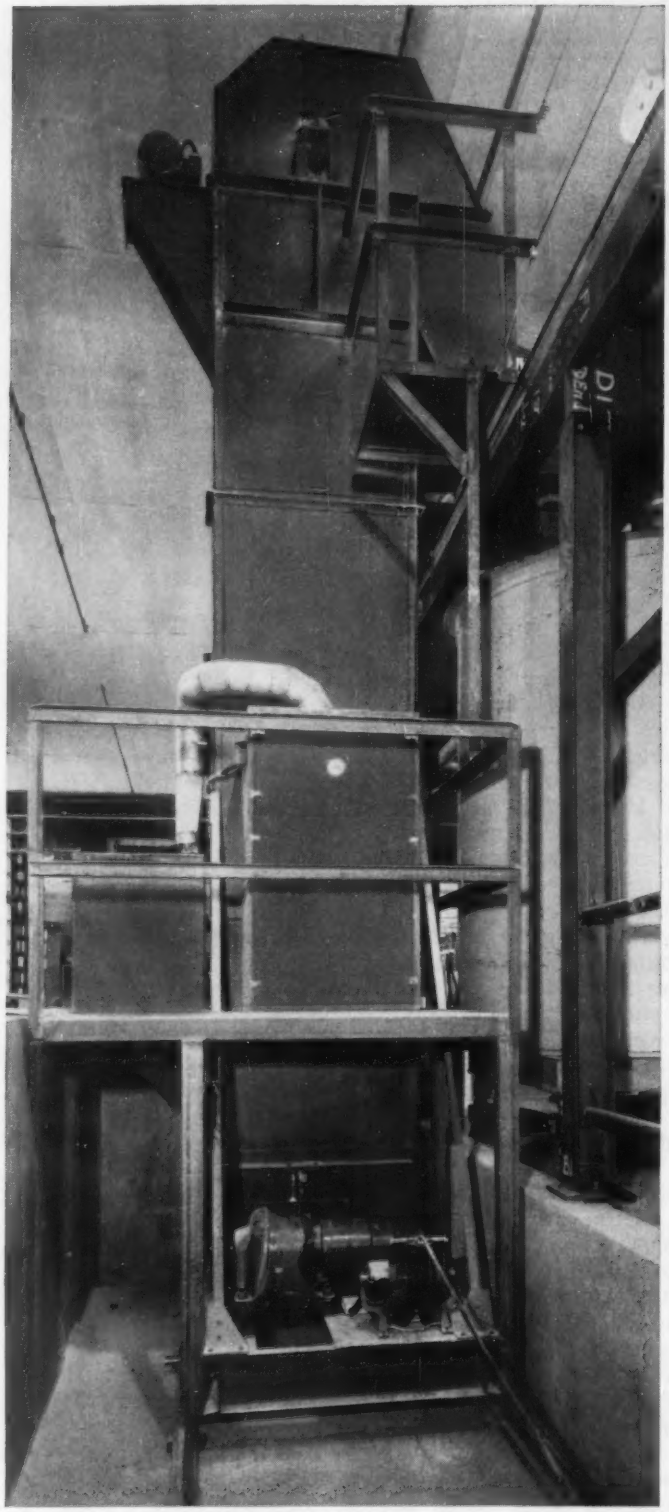
So don't jump to the fatal conclusion that little more can be done to offset rising labor costs through increased efficiency. Take the attitude that you haven't seen anything yet.

Top executives should not be satisfied even with the best that equipment companies now have to offer. They should invest heavily in engineering research, and implement that with pilot-plant proving grounds.

Dynamic growth can continue only through greater value added by manufacture—as quality and convenience—without a proportionate increase in price.

Follow this formula, and before many more decades our industry can achieve its ultimate destiny of taking the housewife out of the kitchen.

No assembly problems with bucket elevators **LARGE** or **SMALL**!



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RESULT:
easier installation
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THE MAGIC BOX

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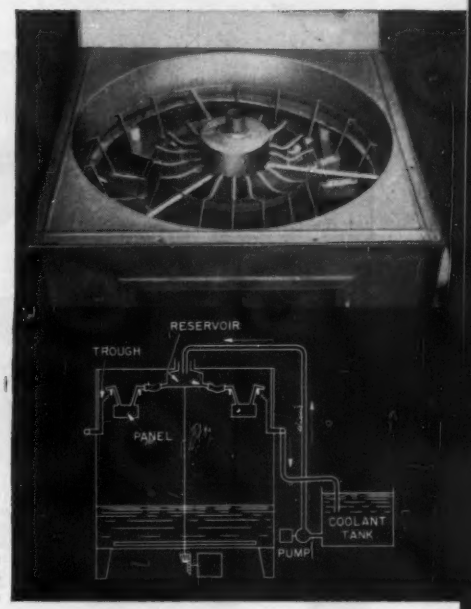

Top view and cross section of Accelerated Condensation Corrosion Test cabinet.

Edgar A. Dieman, Standard Oil scientist, inventor of new Rust Preventive System, inspects metal panel that has undergone test in the humidity cabinet.

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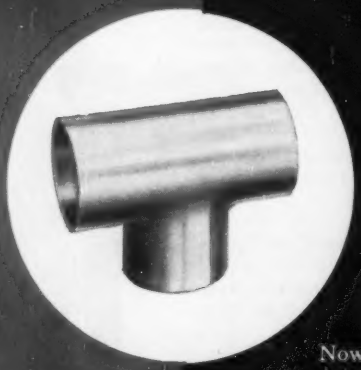

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Stealing Calls for Strong Steps

Ignore the risks—specially high in our field—and you invite operating inefficiency, poor morale, bad public relations . . . Here's how to survey your plant and routines, then draft practical safeguards

NO INDUSTRY is more vulnerable to thievery of goods than the food industry. Thus, you are making a bid for trouble when you become lax in your security measures.

And this trouble can multiply far beyond "miscellaneous financial losses that we'll just write off."

Operating efficiency and morale can suffer severely. So can attendant public relations—and few industries can be more adversely affected by poor public relations. For all too often the thieving troubles stem from internal, rather than unrelated external, factors.

Illustrating what can follow from such shortsighted ignoring is this case of a specific food manufacturer:

Certain local retail stores complained to their wholesaler that a competing retail store was short-pricing this manufacturer's product. The wholesaler was mystified. He'd never sold this particular item to the retailer in question.

The circumstance was reported to the manufacturer—whereupon investigation revealed collusion involving the manufacturer's shipping clerk, one of his truck drivers, and the retailer!

Failure to spotcheck shipments periodically, and failure to prepare proper shipping orders, delivery tickets, and bills of lading, all were contributing factors. And management had been lax in not inquiring about the truck driver before employing him, since it later was determined that he had been discharged from his previous job under almost identical circumstances.

Stealing of raw material certainly will be reflected in the production rate. Theft of packaged merchandise will come to light when a goods shortage begins to affect shipments. Inability to deliver promptly reflects upon company efficiency, embarrasses sales personnel, and may provide opportunity for a competitor to make inroads.

In addition, management often discovers that the theft is not covered by insurance (where there is no

Choice of 3 Paths

Management may choose one of three alternatives relative to plant and operation security.

First, the whole matter can be ignored. But as already indicated this is most imprudent and costly. Theft of items is felt in reduced operating efficiency. In turn, customer relations may suffer, and the annual profit-and-loss statement may contain startling, difficult-to-explain entries.

HARVEY BURSTEIN

Security Officer, Massachusetts Institute of Technology, Cambridge

$ – Half-Billion Loss – $

Problems of larcency, embezzlement, trespass, negligence, and malicious destruction of property have plagued managements in all industries for years.

The Uniform Crime Report (FBI, Apr. '58) reveals that close to $½ billion (some $479 million) was lost last year to thieves, robbers, and burglars.

Over 95% of all major crimes committed during the year had property as their objectives, with larcenies accounting for over $117 million of the total.

Obviously, such problems are much more than mere nuisances. In good management, it is imperative that they be recognized and acted upon.

The food industry hasn't been spared. As indicated in this article, it is especially vulnerable to security problems—including some which do not always apply to other businesses.

The vulnerability is inherent because foodstuffs can be used by everyone, and so they always have a ready thieves' market.

Mere removal of foodstuffs from containers, or stripping of labels or wrappings, make tracing and "positive identification" as to ownership extremely difficult if not impossible.—*H.B.*

FOOD ENGINEERING

proof of forced entry or other such evidence).

Most policies do contain a "mysterious disappearance" clause. But the coverage may leave much to be desired. Where proof of loss is accepted, there still may be some time lag before actual payment of the claim. And this ultimate settlement hardly compensates for the inconvenience, loss of time, embarrassment, and uneasiness caused by knowledge that the person responsible may strike again unless apprehended.

Other than theft of merchandise, there is the serious, and often expensive, problem of theft of tools, equipment, and replacement parts for machinery. Taken, too, are packaging materials, office equipment and supplies, even personal property.

The damages reflected can be considerable. Loss of tangibles may be covered by insurance—but intangibles such as efficiency and morale never can be compensated.

Second is the 'detection' approach, relying upon efforts of detectives, or similar agents (local authorities or fee-charging private agencies). This may provide temporary relief, but also may create more problems than it solves.

Here, morale and efficiency again are adversely affected, because every employee feels he is a suspect. Obtaining sufficient proof may be extremely difficult, if not impossible. Without proof, no legal action is warranted. Thus, little more is accomplished than alerting the person responsible to the need for added caution.

Even assuming success in the investigation and positive action against the individual, the solution is at best only temporary.

● **Management cannot anticipate any long-range benefits while the conditions permitting the original larceny go unaltered.**

Relatively the same situation prevails with bonded employees. Few bonding companies are capable of adequate investigation of all applicants. They assume initially that the law of averages will provide an equitable distribution of gain and loss.

To be noted is the fact that an increasing number of bonding companies now insist that certain suspected personnel undergo polygraph (lie detector) examinations as a condition precedent to payment of the bond. But this can do more than merely damage morale and efficiency. It well may disrupt labor-management relations and cause serious embarrassment to all concerned. Even the possibility of legal action cannot be overlooked. In addition, there may be wide-spread adverse publicity.

From Survey to Plan

Third is the program approach, providing management with long-range and permanent-type benefits. Here, a competent industrial-security survey is made, then followed up with a well-integrated program.

This program has several phases, all tailored to the individual business involved. Aim is for action that is both specific and practical.

Good industrial security begins at the property line and in the personnel office. It extends throughout the business operation. If executives were as selective in choosing sites for their business activities as they are in selecting sites for their homes, fewer security problems might result. Further, losses might be reduced considerably if employees were selected as carefully as friends or club members.

The physical location of any business is as important as the structure itself. To be considered is the status of the neighborhood, police and fire protection, and street lighting. The more congested and more deteriorated the neighborhood, the more frequent the trespass, larceny, and burglary.

● **A food plant in such an area can be extremely attractive to those who are bent on larceny or burglary.**

Management also must consider the immediate neighbors. Do the surroundings present increased hazard of fire, flood, or explosion? Are adjacent businesses attractive to burglars or hijackers? Answers to questions such as these can indicate the security status of your plant.

Some businesses occupy a single structure, or part thereof; others occupy several buildings at a single location. If more than one building is involved, or if there is any distance between the property line and the structure itself, it's wise to consider use of a fence or wall for minimizing the possibility of trespass.

If there are company parking areas, fences can help protect both business vehicles and personal autos. Thus, too, you can arrange check points for inspection of both parcels and vehicles, and so reduce risks of pilferage and larcenies.

Depending on the area involved, perimeter lighting also may aid—being a deterrent to burglaries.

Ingress and egress for each individual building must be considered, since uncontrolled access to premises invites theft. Distribution of keys and controls over their use are factors in reducing loss. Use of such other aids as window grills, bars, and related locking devices merit consideration. Alarms and related devices also can help. But too much reliance on the latter is imprudent.

● **Unhappily, most larcenies are committed during working hours by employees or others lawfully on the premises.**

Alarms do not combat this situation, for they are only operative when the plant is closed. Further, they are subject to breakdown or can be rendered inoperative.

From the security view, internal layout of the plant also is important. And in this consideration, good security is not irreconcilable with efficiency and appearance.

In remodeling a structure or building a new one, advantage should be taken of all physical features that may aid in protection. Here, it's wise to get competent advice on appropriate security factors. By pooling the knowledge and resources of the security consultant, architect, and management engineer, a company can have a secure, well organized, and attractive facility.

Carefully plan the location of your administrative offices. Although the personnel office, for example, should be accessible to prospective employees, it should not be so situated as to permit their having ready access to the plant proper. This is particularly important in the food industry, where standards of cleanliness make it imperative to keep out unauthorized persons.

The same thought may be applied in locating your reception desk. Executive offices should be laid out so as to preclude access of persons having no business in the area. Offices handling payrolls, records, or other valuables, should be centrally located and protected by suitable security aids.

The means for entrance to the plant proper must be studied closely. Limiting of access is a security must. The interest of the Government, as exemplified by FDA activities, indicates the importance of protecting food operations and the need for maintaining high standards.

Access to any manufacturing, processing, or packaging areas, either by trespassers or by employees whose presence in the area is unauthorized, must be controlled in the

interest of maintaining such standards and efficiency.

Your various company procedures also should be carefully inspected. The manner of screening prospective employees is most important.

● **The larcenous shipping clerk, the negligent billing clerk, the indiscreet technologist, or the unscrupulous executive, all can do serious damage.**

Pre-employment procedures seldom are truly adequate. Application questions rarely are sufficiently pointed, and interviewers are not always sufficiently searching. Too often, valuable information regarding the applicant is ignored, or if recorded, goes unnoticed. Nominal references may be checked–leaving other far more valuable sources of information completely overlooked.

It is not uncommon to hire a person without making any inquiries. Management may rationalize that the particular job involved does not justify the expense of such inquiry. This philosophy is shortsighted.

● **The employment of an unsuitable person in any capacity may cost management more than would any inquiry.**

One of the most troublesome areas is the shipping and receiving room. It's generally wide open during working hours, and drivers from outside companies frequently have unlimited access–meaning that security problems can readily arise. Then, too, many concerns permit employees to lounge on the loading platform during breaks. Also, some firms allow workers to traverse the area when coming to or going from work.

Only specifically assigned company personnel should have ready access to these areas. As for drivers from outside concerns, they should be restricted to the loading platform, unless escorted.

All merchandise deliveries should be closely checked before any receipts are signed. Then the goods should go directly to the proper storage area–where there should be another count.

Merchandise should be shipped only on the basis of written, valid orders. All shipping orders should be prepared on pre-numbered forms with sufficient copies for all purposes. As merchandise is removed from inventory, it should be counted as to quantity, and periodic weight checks also should be made.

No merchandise should go onto the loading platform until actual loading is to be undertaken, and an-

FOR SECURITY HERE . . .	. . . TAKE THESE STEPS
1. Plant grounds, with or without parking areas	Protective walls or fencing . . . Single entrance to grounds and parking areas (where included) . . . Gate guard attending in working hours, mobile guards in non-working hours . . . Perimeter lighting at night
2. Buildings having no grounds or parking areas	External lighting
3. Windows, basement and ground level	Window grills . . . Combination locks
4. Windows above ground level easily reached from neighboring buildings	Alarms
5. Doors to premises, regularly used	Keys limited to personnel absolutely requiring them . . . Installation of new locks if key lost . . . Strict accountability of all keys . . . Alarms fitted for after-hours
6. Doors used only for emergencies	Fire locks
7. Plant reception area, working hours	Receptionist . . . Guest book to be signed by all persons other than company personnel . . . Means for sounding remote alarm . . . Direct alarm to fire headquarters
8. Plant reception area, after hours	Guard . . . After-hours log book . . . Fire alarm . . . If facility has grounds and/or parking area, office normally used by gate guard should serve as reception area
9. Personnel office	Place in close proximity to reception area . . . File cabinets with locks, properly secured after hours . . . Limited access
10. Payroll and accounting office, general	Centrally located . . . Limited means of access . . . Safe combinations changed at least annually, or whenever persons with knowledge of same terminate (for any reason whatsoever) . . . Fixed responsibilities for all persons actually handling cash
11. Payroll and accounting office, working hours	Means for remote alarm in case of emergency . . . Office enclosed and main door to area controlled by switch . . . No access permitted unauthorized persons . . . Disbursements through 'teller' windows
12. Payroll and accounting office, after hours	All but basic cash requirements deposited in bank . . . Door and windows fitted with alarms . . . Regular area inspection by guards . . . All safes securely locked . . . All accounts receivable properly stored in fireproof, locked cabinets . . . Access only under escort . . . Keys to principals only
13. Shipping and receiving room, working hours	Truckers restricted to loading platform or shipper's office . . . No movable company property, of any sort, on loading platform in absence of shipping clerk or member of that staff . . . Strict accounting of goods
14. Shipping and receiving room, after hours	Doors closed, locked, and fitted with alarms . . . Regular area inspection by guards . . . Lighted at night . . . Loading platform absolutely clear . . . Access only under escort
15. Plant proper, working hours	Access limited to plant personnel and designated executives only . . . All others admitted only under escort . . . Controlled entrance and exit
16. Plant proper, after hours	No admittance except under escort . . . Controlled entrance and exit . . . Periodic area inspection by guards
17. Pay practices	All payments by check . . . Check given only to employee named thereon (unless he authorizes another in writing)
18. Hiring practices	Adequately detailed applications . . . Each applicant thoroughly interviewed . . . Physical exam for each . . . Credit check . . . Contact with former employers and immediate supervisors . . . References for background data
19. Cash sales	Pre-numbered sales slips . . . Supervisory approval of sales . . . Responsibility for transactions strictly assigned to specific personnel . . . Accounting log maintained
20. Tools, equipment, supplies, etc.	Charged out from appropriate stock clerk with receipts . . . Written, OK'd requisitions

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Ole Sage Episode

other count should be made during loading. A receipt should be signed for all outgoing merchandise, even if delivery is to be made by company personnel.

Inventory controls, the handling of cash, and the proper training and employment of any guards all fall within the scope of a proper security survey. Also involved is the matter of storing and maintaining vital company records.

As for any loss of bills relative to accounts payable, there's little doubt but what the creditors involved will insure their replacement. However, the maintenance and care that management affords its accounts receivable is most important.

Here, unremedied laxities can lead to total loss of a business. For loss of such records denotes far more than a lack of security. It indicates bad management.

Our checklist (see the preceding page) details 20 areas and operations where security problems commonly arise, then indicates protective measures to apply. However, this "where and how" list covers only general aspects. Your properly planned program should be drafted to your own plant specifics.

Relative to use of a full-time trained security officer, the fact that you feel you can't afford one doesn't mean that good security programming is outside your scope.

Consultant services, long employed by businesses for guidance in technical fields, are now offered.

Such qualified services can, under certain conditions, offer your organization a program commensurate with the efforts of a full-time plant security officer. Less expense is involved here, and a sound plan can help management establish long-range policies.

This article has aimed to give an idea of the range of industrial security. True, the points apply to virtually all businesses. However—

● **The unique nature of the food industry and its relation to the public, make it a field where security considerations are of particular importance.**

No industry can operate indefinitely if it operates inefficiently. Good security programming can improve efficiency by preventing losses of materials, time, and effort without the risk of adverse publicity or unnecessary expense. Good security is good business. —*End*

JOHNNY CAN READ: High school in upstate New York has course in remedial reading for first time as result of Jell-O grant that enabled teacher to take special studies at nearby college during summer months.

Wins Dividends by Aiding Teachers

GF fellowships build local support at plant level, help prepare better work force for future

COMMUNITY "CLIMATE" can be as important to your plant's success as the meteorological type that spells the difference between good and bad crops. For local goodwill can bring you dividends in the form of fair taxes, good services, and workable re-zoning rules.

General Foods, which feels that "community relations start as soon as you're in business," reaped a harvest of such goodwill last summer with a unique teacher-fellowship program that sent 74 high school instructors to college to improve their skills.

The plan is flexible enough for adoption by any food manufacturer to tailor to his own resources:

The GF project involves "no strings attached" financial grants by the organization's local plants to community school boards for use by teachers who want to take graduate courses. Last summer, 14 plants in 13 localities anteed up a collective $15,000 in donations.

Long before Sputnik made Americans look nervously at their schools, GF was digging hard into the problem of what could be done to better our educational system. The answers it got back from educators, colleges, and government officials spotlighted the high schools as the area needing the greatest improvement.

In weighing alternative approaches to the problem, GF wanted to avoid underwriting anything already covered by taxes—such as salaries or physical equipment. It finally decided on a program of grants-in-aid that provide incentives for teachers to increase their skills (and credit points, upon which salaries are based) as well as attract more people to the teaching profession (to make up for the 35,000 who leave it each year).

After "market testing" the idea in LeRoy, N. Y., where a Jell-O plant donated $1,000 in the summers of '56 and '57, GF expanded the program to the national level this year. Any plant manager deciding he "wants in" checks with his division head for final OK, because the donation is charged against the division's "profit contribution"—an estimate which each division draws up at the start of the fiscal year.

For GF, the fellowships mean increased effectiveness of the plant manager's community relations, thus offsetting the unfavorable impression that absentee ownership sometimes creates. Says one GF spokesman: "Our future employees are getting their education now. The better prepared they are, the more productive they'll be when they come to work for us."

For the school—and the country—the program means invaluable help at the local level at a time when such aid is critically needed.

—*FE Staff*

Does It All Boil Down to Automation?

WAGGING HIS HEAD wisely at Milt Sorenson, Batt Bulwark quickly opened fire in the after-lunch discussion of the Guff & Gripers–

"So your company's going all out for automation," he said knowingly.

"Is that a wild swing at our *modernization* plans?" Milt asked.

Mull & Mull Co.'s works manager scoffed: "Oh, you really didn't fool me much. Since our last meeting, I've thought a lot about this talk of updating plants. And I guess I have to admit it's important to keep your plant modern against the competition."

"Thanks," Milt remarked dryly.

Batt ignored him, went on in a very positive tone: "But it seems to me that a *most important* angle has been overlooked." He surveyed the group around the table as if for once he was ahead of the parade.

"Well, let's have it," Milt egged him on. "What's the vital point that we're missing?"

"Why, you think automation will help you cut costs by letting you drop a lot of workers from the payroll," Batt declared. He shook his head and held up a warning finger. "Now, if I know anything about it, I'll bet my last penny that the union at your place will *feather-bed* those workers you count on dropping. You'll pay them just the same–and for doing nothing."

"Oh, come now, Batt," Barney Hasbrook cut in. "Not all unions are alike. Ole will back me up on that."

"True," Ole Sage agreed. "In some instances that I know of, union officials have recognized the need for their companies to mechanize and use fewer employees. These union leaders have realized that the remaining jobs were more desirable and more secure, the workers' pay relatively higher, and their work less fatiguing. I could cite many examples in our food industry."

This turn of the talk had Batt thundering: "If you don't cut employment costs, how can you expect modernization to pay off?"

"You're looking at modernization too narrowly, Batt," Ole came back. "It's unrealistic to just sum it all up as automation that replaces workers. Modernization projects can help to reduce costs in many ways–and they don't all lead to a smaller work force."

Batt said suspiciously: "I suppose you have some case histories?"

"Many," Ole promptly replied. "First let me tell you about two different food companies that faced the same problem. One of these concerns is among the largest in the industry, while the other generally employs less than 100 workers.

"One plant prepared icings for cakes and cookies, the other a chocolate topping and a chocolate drink base. Both of them processed by dissolving a floating, pulverized solid in a liquid. And both had improvised by doing it with a mixer designed to rapidly combine liquids.

"This method was time consuming. Whereas the mixers were adequate when the lines were first established, they subsequently became costly bottlenecks when greater output was demanded.

"Furthermore, speeding production on either line presented a real problem, since both companies lacked the requisite floor space and ceiling height to add more mixers."

"So how did they clear their bottlenecks then?" Batt demanded.

"This way," explained Ole: "The large company obtained a special unit designed for that specific type of mixing. This new unit, true enough, held only about the same volume as the old one–but it proved to have nearly three times the dissolving capacity. Needless to say, it paid off–but good!

"Shortly afterward, a report on this big company's experience was read by the smaller outfit–which then reaped similar results when it installed the same specially designed equipment. Right away, output per worker on the production line was more than doubled. In short, both plants made big savings just with a new mixer. But–and get this Batt –no jobs were lost."

"Well . . . uh . . . I suppose," stumbled Batt, "that there is something to be said for that approach."

Ole pressed on: "Often, modernization of a line may require no more than replacing one or two obsolete units–updating at moderate cost. On the other hand, large installations calling for large expenditures are very frequently in order in our fast-moving industry.

"A few years back, one food company junked all the machines on a number of its packaging lines, replacing them with improved units at a cost running over $250,000. Production was thus boosted in the same plant space, thoroughly justifying the investment.

"Then, only two years later, the development of still better packaging equipment directly obsoleted these improved lines. And this time, installation of the newer units cost almost twice as much. But–they made it possible to use packaging materials that cost much less.

"Here, then, were two modernizations, one after the other–and both paying off for the firm without appreciably affecting employment, either up or down."

As the meeting broke up, Batt confided in Milt: "Some time, at one of these meetings, I'm going to keep my trap closed and not say a word. And yet I'll bet that even then I'll be in the wrong!" —*End*

"Both of these plants," said Ole, "made big savings just with a new mixer—in fact, the very same type mixer."

IVAN C. MILLER
"Food Engineering"

BEFORE AN ITEM reaches distribution pipe-lines, it has to get go-ahead sign from Kitchens. Critical taste tests by staffers and product officials, as well as sampling among employees and housewife panel, are among many preliminary steps before product gets green light. Department's role in new product development begins in the early stages.

Sharp Consumer-Contact Program

Housewives call turn on fate of new items, so razor-fine fixes on homemaker trends are urgent . . . GF's smart approach is through market-slanted Kitchens Department that brings product users and product planners into a much closer rapport

SHARPER INSIGHT into Queen Consumer's meal-time wants, needs, and problems have become a most important requisite in development of successful new product programs.

To put future growth on a more solid footing, industry leaders are precisioning their consumer-contact activities for stronger marketing effectiveness. One firm doing just this is General Foods, which has restyled its Kitchens Department to give it a broader marketing role.

GF figures that its "new look" Kitchens Department will strengthen the corporation's marketing program these four ways:

1. Blueprint for long-range planners homemaker trends that affect product sales potential. In its broadened role, the department is slated to be a more vital two-way pipeline—interpreting GF to consumers, and relaying homemaker wants, needs—even complaints—back to product officials.

2. Strengthen the corporation's family image by achieving a more intimate association in the homemaker's mind between GF products and her own kitchen—where, surveys show, 70% of the family's meals are eaten. The onrush of retailer-sponsored brands, helped in part by the housewife's confidence in her favorite, clean-looking, modern supermarket, is a warning to manufacturers that something more personal than remote corporate symbols may be in order to carry through the impact of brand merchandising.

3. Put valuable consumer-oriented data behind new product development, a key element in GF's profit-making ability. The great importance of new items is shown by these figures: Between fiscal '53 and '58, while GF's total net sales boomed a healthy 43%, new product net sales rocketed 290%! Also, in the last fiscal year, new products (those debuted since '48) accounted for 11.6% of total net sales as against only 4.2% five years ago.

4. Give products divisions additional tools with which to build stronger consumer franchises. This includes such services as unusual recipe ideas that broaden the market for existing products, ingenious serving ideas for an advertising campaign, and briefing of salesmen.

Here is how the department's stepped-up role is capsuled by President Mortimer: "The Kitchens speak for—and to—GF. They relay the consumer point of view to all areas of our business.

"Letters are one way the Kitchens get information which speaks to GF—interpreting the homemaker's external quest for creativeness, and indicating paths toward improvements in products and recipes."

These letters, numbering more than 3,000 a month, help the department to keep tabs on today's trends, as well as to anticipate subsurface shifts before they shape up into trends. Moreover, 20 to 30 department reps are on the road each month—attending professional conventions, introducing new products, talking before consumer groups, working with food editors, participating in product test-marketing, and making radio-TV appearances.

What's learned from these letters and field contacts is being used to forge a closer link between homemaker and GF products. To strengthen the association between product lines and the area where the homemaker prepares her meals, the firm has given the Kitchens Department its own brandmark (see illus-

THAYER C. TAYLOR
Associate Editor, "Food Engineering"

EATERS WRITE, and the mail—more than 3,000 letters a month—keeps staffers alert to homemaking trends, suggests desired product-package improvements, and enables Department to anticipate future problems.

'Seeds' Future Business

tration) for use on packages and in advertisements. The seal says, in effect: "Here is a product—or recipe—you can rely on. It has been thoroughly tested in GF's Kitchens." By relating product directly to the homemaker's kitchen, the seal will have a more intimate meaning to consumers than the more impersonal corporate image.

You'll probably see more steps in this direction as food makers move to counter the supermarket loyalty which has helped to fuel private-label growth. Challenge here is to shore up brand loyalty with a personal note that reinforces the housewife's confidence in strongly-advertised products.

The brandmark, introduced with Swansdown golden pound cake, received extensive use in the firm's "Better Breakfast" promotion in October. Special recipes developed for some of the Post Cereals packages and newspaper advertising were linked to the Kitchens' seal.

Set for the future is greater use of the symbol in special merchandising campaigns, in introductory drives for new products, and in the corporation's broad range of consumer-contact activities.

Stepped-up activity in new product development—where the department's consumer-contact work really pays off — will carry the Kitchens deeper into the marketing area. As Ellen-Ann Dunham, vice-pres. of GF Kitchens, sees it: "It's up to the Kitchens to start each product on its way with the kind of direction that will make the product a success in the home or restaurant."

At first, target recipes are developed as goals for research chemists. Then, if the newcomer shows promise, a whole slew of serving ideas are worked up, inviting widest possible use.

Sometimes, the Kitchens will "tailor" the product to the needs of a specific market. For example, when the Institutional Products Division planned a special version of Jell-O lemon and strawberry chiffon pie filling, research among mass-feeding establishments indicated the need for a product with firmer texture and a shorter mixing time.

The Kitchens tackled the problem, and came up with a product that had the desired texture and which cut mixing time from 14 to 5 min. Buyer reaction was so favorable that other flavors were introduced.

Taste tests on new products are carried out on three levels. Trained staffers conduct the initial tests. Then samples are given to employees at White Plains headquarters, along with minimum instructions to encourage the users to make up their own variations and choose their own cooking equipment. Purpose here it to give the Kitchens an insight into how homemakers may treat the new items in their own kitchens.

As a final pilot check, samples are sent to a 5,000-member homemaker panel in Washington, D. C. A companion questionnaire asks for comments on recipe instructions, product, and packaging.

No new product reaches distribution channels before it gets the green light from the Department. There, it must pass tests such as these, all drawn up from the homemaker's viewpoint: 1) Does it have good flavor? 2) Can it be prepared with average kitchen equipment? 3) Is it easy to store? 4) Are cooking directions simple and clear? 5) Can it be varied in appetizing ways?

Besides testing new products that originate elsewhere, the Department often comes up with ideas of its own. Here, mail inquiries asking for —or suggesting—new meal-time uses for an item are a fruitful source.

Further, the Kitchens aim at expanding the market share of existing products by developing new and attractive in-meal uses. To cite one instance, Post Cereals tapped plus-sales as the result of ingenious recipes calling for the products' use in the making of baked desserts, breads, and cookies.

And a special cheesecake recipe for Jell-O lemon instant pudding helped to double product sales recently. More than 2 million consumers bought the product because of the recipe.

The increased tempo makes the Kitchens Department a close working partner of the various product divisions. This coordination begins at the top, where Miss Dunham often huddles with the director of new product development on GF's over-all new product committee.

Reporting to the vice-president of research and development, Miss Dunham works on the carton and container committee, where she reviews package changes (giving the final OK on all recipe instructions). She also participates in overall advertising planning.

And, as further evidence of the Kitchens' importance in broad-gage corporate planning, Miss Dunham recently became the first female vice-president at GF.

The Kitchens' rich lore of product knowledge is used every day by the divisions in one form or another. For example, the Department holds sales schools to acquaint institutional salesmen with GF items so they can answer on-the-spot questions put by buyers and chefs. And trained dietitians work out of regional offices with salesmen to give customers ex-

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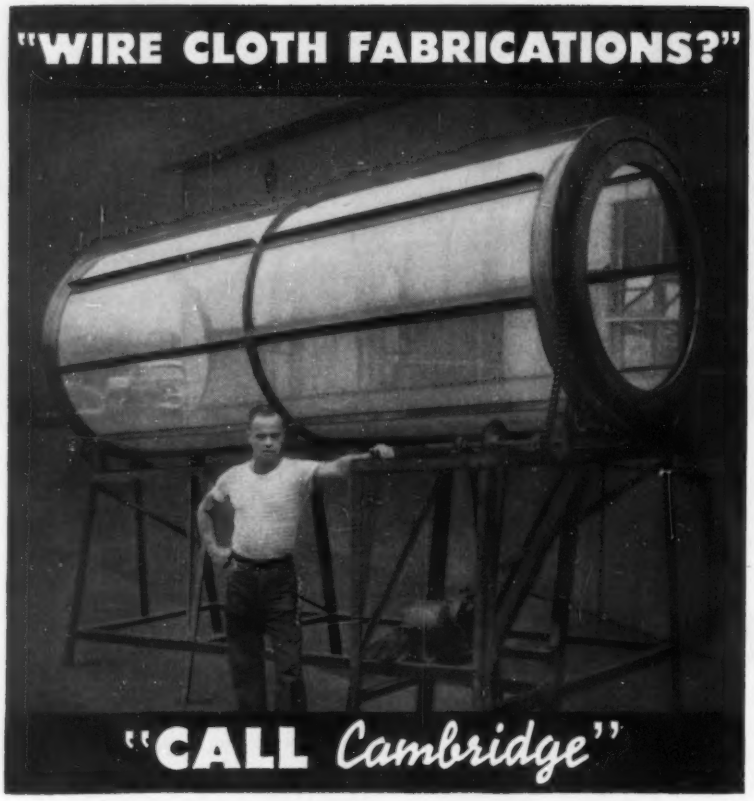

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OFFICES IN PRINCIPAL INDUSTRIAL CITIES

pert help on the use of products.

Keeping close tab on mail and personal comments about GF products, the Department posts the appropriate divisions on trends. If several complaints about the same item come in, the specific division is alerted that a change in ingredient formulation or package instructions may be in order.

Core of the department's food work is carried out by seven test kitchens (there's also one each for laundry products and dog food). These are:

Future products—where all potential new entries are tested (some for as long as 3 yr.).

Entree and vegetables—where the meal's main course is studied for nutrition, variety, and taste appeal.

Baking—where daily experiments with pies, cakes, and cookies aim at developing new flavors and textures, easier mixing methods, interesting recipes, and original decorating ideas.

Recipes—where new and unusual ways of using familiar ingredients are cooked up.

Hotel and restaurant — where quick-fix recipes are made up for institutional products. Staffers remain alert for professional tricks of chefs—a quick sauce, an easy meat glaze, or make-ahead desserts — which they can adapt for homemakers.

Creative cookery—where tips for meal-time glamor are dreamed up.

Tasting—where the results of the other kitchens are put to the ultimate test. Staffers in this section are carefully chosen so that there'll be representation from all geographical areas, as well as rural and urban sectors.

Backstopping the Kitchens are other functional specialists. These include:

Product representatives, assigned to certain products, perform liaison between GF's product divisions and the Department. Some of the typical marketing aids: Supplying special recipes for a TV commercial, recommending consumer information that should be included in a package redesign, or suggesting an insert that will dramatize a new product's best uses.

Editorial translates all that comes out of the Kitchens into recipes, package directions, booklets, teaching aids, and how-to-do tips.

Conventions are a good opportunity for acquainting opinion-molders with products, and finding out what they think of GF products.

Correspondence: Each letter that comes in gets a personal reply and, usually, help in the form of recipes or a fact-book. —*End*

How to Up Marketing Power

Your performance depends on smooth teaming of functions. So declare top-flight experts in GMA working-tip session

THERE'S NO DISPUTING the importance of the marketing concept in today's competitive picture—especially with concentration of more sales among fewer stores, the fierce jockeying for brand leadership, and the inroads by private labels.

But how a company should go about structuring theory into workable practice finds much less agreement.

Thus, attention was particularly high when, last month, a panel of front-line marketers detailed their pointed approaches in a key session at the annual Grocery Manufacturers of America meeting in New York City.

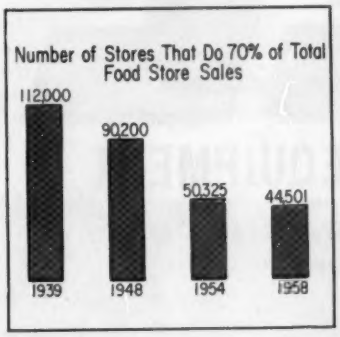
For shaping the successful marketing organization, prime emphasis was placed on these bedrock principles: Clearly staked out lines of responsibility (especially between planners and day-to-day doers), flexibility for easy maneuverability, and coordination between home office and field-sales activities.

At Kraft Foods, according to Marketing Director Chester R. Green, product-group management is the keystone. Here, all items are arranged into four groups: 1) Institutional and industrial, 2) salads, 3) special and confection, and 4) cheese.

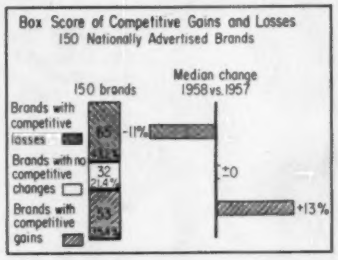
Heading up each group is a marketing manager who is responsible for advertising and promotion plans, as well as the coordination of pricing, profit planning, and sales forecasting. Reporting to him are managers of advertising, sales promotion, and product sales.

Each group head reports to the marketing director. Completing the latter's staff are managers of advertising, sales development, marketing research, sales distribution, trade relation, and consumer relations.

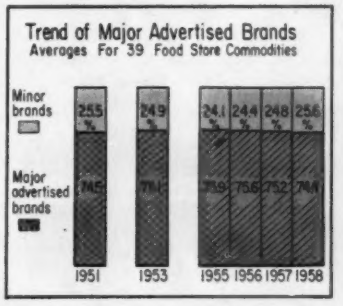
For flexibility, the number of people through whom communications must go is kept to a minimum. Also, a top-level three-man senior marketing committee, which reviews all marketing plans, is geared to make fast decisions.



BIGGER SLICE of sales pie is carved out by fewer outlets as 12% of stores now account for 70% of total volume.

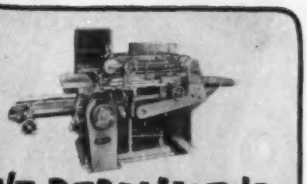


SHARE-OF-MARKET losses were suffered by 43% of 150 national brands as competition for shelf space intensified.



PRIVATE BRANDS increased their market share for third straight year, are now past the 25% level.

In General Foods' setup, operating divisions plan and execute product marketing from manufacturing through to consumer purchase. Jell-O's marketing department, described by James D. North, has two key operations areas—advertising-merchandising, and sales-sales promotion. And two staff functions—market research (for business analyses), and person-



"WE RECOMMEND THIS LUBRICANT TO OUR CUSTOMERS"

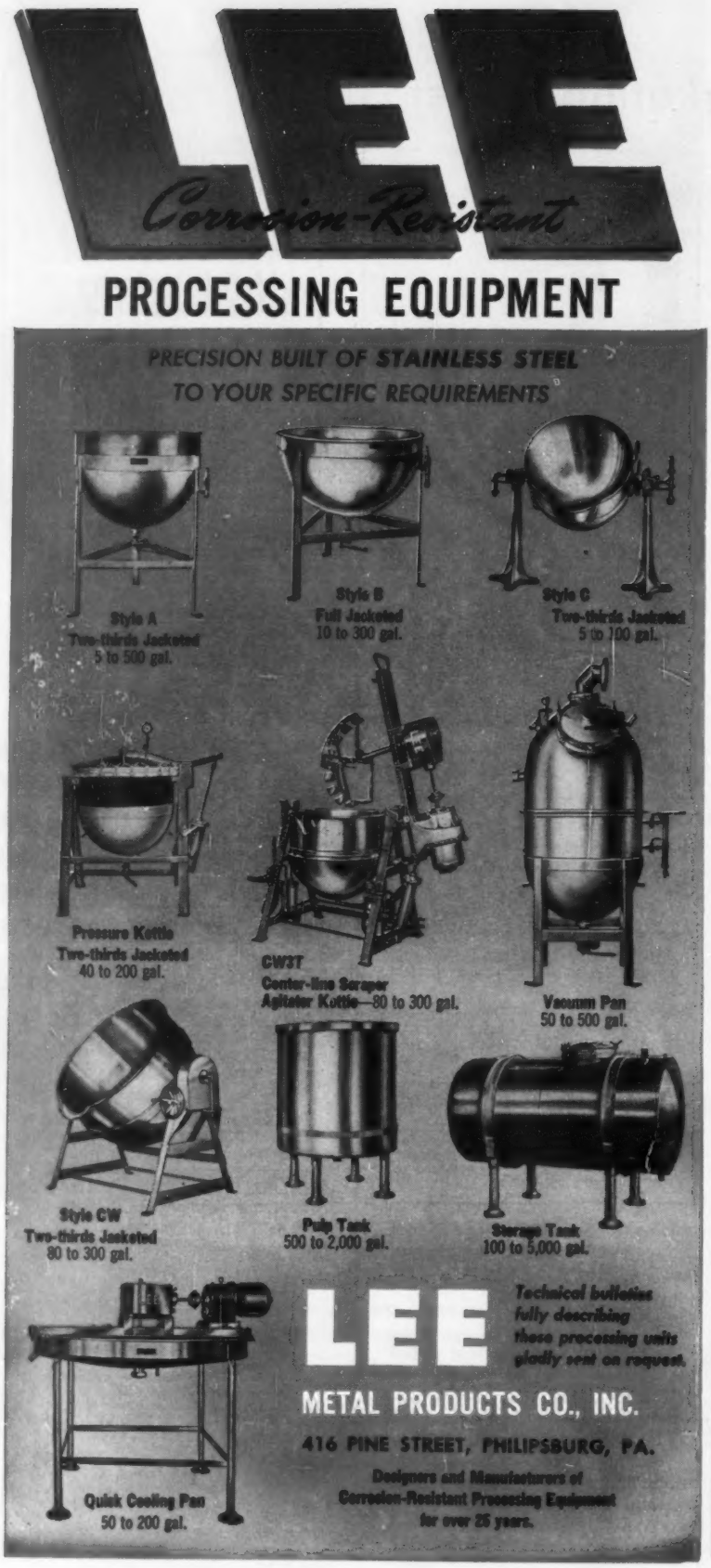
—says PACKAGE MACHINERY COMPANY
Springfield, Mass.

"We have found LUBRIPLATE Lubricants to be very effective and use them extensively in our machines. To assure the proper use of LUBRIPLATE Lubricants for re-lubrication, we place tags on our machines before shipment. Thus the purchasers of those machines know the LUBRIPLATE Product we recommend for each application and where to obtain it."

REGARDLESS OF THE SIZE AND TYPE OF YOUR MACHINERY, LUBRIPLATE GREASE AND FLUID TYPE LUBRICANTS WILL IMPROVE ITS OPERATION AND REDUCE MAINTENANCE COSTS.

LUBRIPLATE is available in grease and fluid densities for every purpose . . . LUBRIPLATE H. D. S. MOTOR OIL meets today's exacting requirements for gasoline and diesel engines.

For nearest LUBRIPLATE distributor see Classified Telephone Directory. Send for free "LUBRIPLATE DATA BOOK" . . . a valuable treatise on lubrication. Write LUBRIPLATE DIVISION, Fiske Brothers Refining Co., Newark 5, N. J. or Toledo 5, Ohio.



nel development (for building marketing manpower).

Advertising-merchandising responsibilities, assigned on a product basis, are carried out by four group managers. Reporting to them are 12 product managers who, in the course of developing and managing a marketing program for each item, make up each product's individual volume and marketing expense budgets.

Over in sales and sales promotion, jobs are assigned on a total division, rather than product, basis. Carrying out this work are a national sales manager, field sales manager, sales promotion manager, and a small staff of headquarters specialists.

Pulling everything together is a sales plans committee, on which sit the advertising-merchandising manager, his four group managers, national sales manager, and national sales promotion manager. The group reviews all marketing plans, and it schedules the work loads for execution of the plans.

Not-So-Big Can Do It

Of course, smaller firms may not have the resources for such an elaborately structured marketing department as the two described above. However, as Ralston Purina's Geoffrey Baker pointed out, even medium-sized outfits can mount an effective program if they: 1) Center all marketing responsibility in one man, 2) select an advertising agency geared to carry out such staff work as market planning, 3) spend money for outside services (such as market research) when necessary, and 4) make extensive use of food brokers for field work.

Lending dramatic emphasis as to why you should make sure your marketing department is organized for maximum efficiency was a sharp summary of 1958 food industry trends by A. C. Nielsen Co.'s J. O. Peckham. The following three significant developments (also see illustrations) were noted at the retail level:

1. Stiffer brand competition. A check of 150 product labels showed that 65 suffered a median loss of 11%, 53 chalked up a median gain of 13%, and 32 held their own.

2. Concentration of business among fewer outlets. This year, 44,501 stores did 70% of total food store sales, as against 50,325 in '54, and 90,200 in '48.

3. Private brands growth. Out of 39 food-product groups, major advertised brands in 21 classifications suffered declines. —*FE Staff*

For more data, circle 274 on Reader Service Card

CASE HISTORY OF MONTH

From files of National Consumer Panel Division of Market Research Corp. of America. Material is factually correct. Identities of product and companies have been masked to insure anonymity.—The Editors

Gaging the Time to Go National

Management's problem

NINE MONTHS AGO, we brought out a new sweetened cereal and started testing the product in one of our sales regions. Object was to see how it would move, in order to determine whether we should go national with it.

With the help of a special "introductory offer," we secured distribution and obtained a high degree of trial buying at the consumer level. Sales climbed very nicely for two months, and have held steady since then.

The volume is considered adequate to justify moving the brand into national distribution. Should we do it?

What Would You Do?

Management's decision

Before going ahead with such an expanded marketing program, we arranged for a special study by the National Consumer Panel. This was designed to answer these two significant questions:

1. What is the brand's total penetration? In other words, what percent of the families in the area ever bought it?
2. What is the pattern of repeat purchases?

The findings were quite unexpected. Purchase records of Panel families clearly revealed that the brand's steady month-to-month sales level was sustained mainly by new buyers. Relatively little of the volume came from repeat purchases.

Result of action

This indicated real trouble, because it would obviously become increasingly difficult to maintain satisfactory sales if the volume were to be primarily dependent on new buyers. To be successful, a product has to build up a growing core of satisfied, loyal users.

Management, therefore, cancelled the plans to move into new areas. Instead, it concentrated on making improvements in the product. When this was done, the remodeled product was introduced into a second area.

In order to prevent being misled again by total consumer-movement data, and because a decision now had to be made more rapidly, management contracted to receive special weekly reports on sales and repeat buying in the new test region.

This made it possible for management to reach—in just 12 weeks—a sound conclusion as to the brand's overall acceptance. According to the findings, volume in actual repeat business would be adequate to build a profitable national product.

For more information, write to Case-History Editor, FOOD ENGINEERING, 330 W. 42nd St., New York 36, N. Y. Your inquiry will be directed to source of case-history item.

Outstanding Accuracy

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Dial Thermometer

Check these functional features

- Direct-drive Bourdon Coil with a filled system for longer lasting accuracy.
- Stem can be placed at any desired angle and case can be rotated to most readable position.
- External calibration for zero setting.
- Unaffected by stem alignment.
- Accurate to one scale division.
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For Every Pack . . .

maintain natural flavor and color

with Clinton Products

WHATEVER your packing problem, you can enhance the natural flavors and colors of fruits, preserves or vegetables in every pack. For each case there's a just-right corn syrup (dry or liquid) and *Clintose*® dextrose that you can rely on for uniform results every time, because:

CONSISTENT FORMULATION MAKES CLINTON PRODUCTS RELIABLE

Three analytical control laboratories and several single-purpose testing stations are located at strategic points in our plant. They check every stage in the processing of *all* products . . . they check *all* finished products to be sure specifications are met exactly. That's why you can depend on Clinton products to do the job for which they are needed.

Your Clinton salesman can help you select the right products to give your pack the properties you want. And, should you need special production advice, *prompt* technical service is available when you need it. Call your Clinton salesman today, or write:

CLINTON CORN PROCESSING COMPANY
CLINTON, IOWA

CLINTON ... *Where research today improves tomorrow's product*

$5 Million Off the Beam?

The "September is Canned Foods Month" promotion apparently fell short of stampeding buyers to supermarkets' canned foods departments. Canners contacted by FE said the $5 million drive was at best a qualified success. And Market Research Corp. of America reports that family purchases of 8 of the 16 products it checked dropped below the level of the previous Sept.

Processor comments indicated that the campaign was a month too early, since the fresh-produce season was still in full force. Also, that planning got underway too late to allow distribution pipelines to be filled.

One mysterious contrast: The Nargus-*SatEvePost* "Food Store Spectacular," held Sept. 18-27, was said to have brought smaller retailers $51 million in plus business. Nationally, total retail food store sales for Sept. were at the same level as for the previous month and for the comparable '57 period.

Face-Lifting for Anonymous Meats

For years, meat companies have chafed at seeing prepackaged meats sold without any packer brand identity. Moving to fill this vacuum, Armour now offers retailers free colored foil insert labels for use with the firm's prime and choice beef cuts.

Object is to build brand consciousness that will trigger repeat sales as well as carry over to the firm's many shelf items.

'59 Target: Lower Marketing Costs

Look for some sharp cost probing into marketing practices. One area now getting a lot of attention is sales operations.

Canada Dry has begun a series of training clinics to broaden the scope of its operations managers. Men receive intensive schooling on such varied topics as finance, sales forecasting, manpower evaluation, and production costs.

In a move to shorten communication lines between distributors and the central sales staff, Pabst has abolished divisional sales offices, doubled its regional sales outposts, and named a general sales director. More streamlined selling and administration are expected to result.

Family Skeleton Gets an Airing

The food industry's private label problem was finally brought out of the closet last month. The ticklish question received several scheduled and non-scheduled discussions at the GMA meeting in New York.

With chains expanding their own labels deeper into the specialty food field, and national brand outfits feeling they have to pack for chain labels "because some one else will," you can expect a lot more huddling among manufacturers and between packers and retailers on this topic. GMA's Paul Willis, urging manufacturers to examine how their own products can bring more profits to distributors, said his group will launch a full-scale study into the problem.

Speaking for retailers, National Tea's H. V. McNamara cited the "stature of the supermarket" as a new competitive force vying with brand merchandise. He suggested that brand manufacturers packing private labels may have a better chance of keeping their goods on store shelves.

But Minute Maid's John Fox saw little profit in that direction. Said he: "This kind of activity is not priced by cost, but by competition. If you take the controller-treasurer approach, you won't sell."

Baby Crop "Bigger Than You Thought"

If you've been charting future sales to population estimates, you'll have to revise your projections upward. Confessing that births for the last three years exceeded previous estimates, Census Bureau now sees an even larger population than it forecast earlier.

The Bureau now projects a '65 population between 193.6 and 199 million (compared to the earlier 186.3-193.3 million ranging). By '65, Bureau sees the 5-13 age group (presently 31.1 million) jumping to 36.3 million, the 14-17s (now 10.6) hitting 14.3 million, and the 18-21s (now 9) going to 12.1 million.

BRIEFS

Sweet tooth helps cereal sales. Kellogg reports that presweetened cereals have upped share of market from 12% to 16% since '55.

Three steps needed to increase pork sales, says Super Market Institute Pres. Henry J. Eavey, are: Leaner meat, balanced production to even out prices, and better labeling of fully cooked and partly cooked hams.

Broad public information program to rebut faddists will be earmarked by National Potato Council. Move comes at a time record crop is expected.

Milk dealers' advertising and promotion expenditures reached a record $73 million (1.1% of sales), in '57 reports Milk Industry Foundation.

Private label baked goods growing fast. Omar, recently bought by Continental Baking, grossed $1,250,000 from this phase of its business.

Food industry will hike advertising budget next year, Assn. of National Advertisers study indicates.

Average salesman spends only ¼ of working hours actually selling, Ohio State U. survey finds. Greatest time wasters: Haphazard routing, needless back-tracking, and too many trips from field to office.

WONDER
ENRICHED
BREAD

Profitable Brands Start With Cherry-Burrell

Fresh. Even textured. Always good. Little wonder Wonder Bread and jelly is an after-school tradition in millions of American homes.

Cherry-Burrell Ingredient Mixers help Wonder Bread keep its consistent quality by combining ingredients completely and uniformly. Direct expansion cooling coils in the mixer hold final dough temperature constant and controlled. And a fine screen pipeline filter keeps all foreign objects out. Just three ways C-B Mixers make Wonder Bread better and a best seller.

In-plant profits, too. Cherry-Burrell builds profitable production into its Ingredient Mixers. A maximum of 400 pounds of chilled and emulsified ingredients are pumped into the dough mixer in just 90 seconds. A high speed transfer pump empties the mixer in as little time.

Other Cherry-Burrell products help the food industry process profitably. C-B Round Processors heat, pasteurize, cook, mix, blend, cool, hold and set with efficient flexibility. Superhomo Homogenizers operate and are maintained at minimum cost. Valve caps absorb 98% of valve wear. Save plugs and seat regrinding. And Stellite suction and discharge valve seating surfaces reduce maintenance as much as 80%.

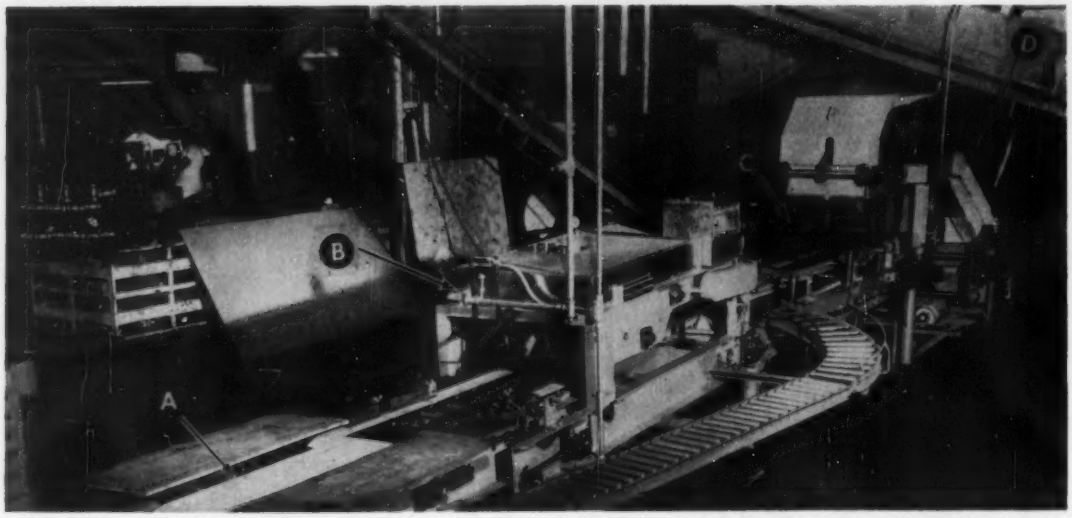
A Cherry-Burrell Sales Engineer will show you the new profits you will realize with Cherry-Burrell equipment. His services are yours without obligation. Call or write him today.

Sales and Service in 58 cities

CHERRY-BURRELL
CORPORATION
CEDAR RAPIDS, IOWA

Food • Dairy • Farm • Beverage • Brewing • Chemical • Equipment and Supplies

For more data, circle 277 on Reader Service Card



KEY MACHINES in glass handling line for baby foods include case feeder (A), flap-opener (B), case unloader (C), and single-filer washer (D).

Glass Damage Curbed as Line

Gerber does it with gentle-handling flap-opener, case unloader, single-filer washer, and special conveyors . . . Integrated drive system and timing controls protect jars against impact, end jam-ups

CUTTING DOWN DAMAGE on today's high-speed glass-packing lines is always a problem. But now a packer has gone far toward spiking this bogey with an integrated line that stresses gentle handling of glass jars, simplicity of operation, and positive control at all times.

The result of a 5-yr. research project by Gerber Products, Fremont, Mich., the line is now in operation at the firm's Rochester, N. Y., plant. Briefly, it includes four Gerber-designed units – case feeder, flap-opener, uncaser, and single-filer washer–plus a filler and a capper built by outside suppliers to the processor's specs.

Director of the project was R. F. Krupp, manager of the Engineering Research Dept.

Gerber expects to reap big savings from the new line in these four areas:

1. Sharply reduced glass damage –by eliminating glass-to-glass contact through use of flat-top chain belts mounted with positioning flights.

2. Fewer jam-ups–as a result of integrating each unit to the overall line with a hydraulic-mechanical system that keeps all components running at proper time-speeds.

3. Less profit-eating downtime–because of positive control of containers, from uncasing of empties to case-packing of filled jars.

4. Lower labor costs–since only one man is required to feed cases in the new line, compared to three needed previously.

Furthermore, the integrated line handles up to 700 jars/min., compared to old 600/min. speeds, and can even whisk containers through at a 800/min. clip if need be (depending upon product).

To integrate the individual units into an engineered whole, as well as achieve more positive control, the line has a hydraulically operated drive with complete mechanical tie-in for all phases. An important reason for this is that glass jars being run at slow speeds do not react the same way to conveying, shearing, and starwheels as they do at high speeds.

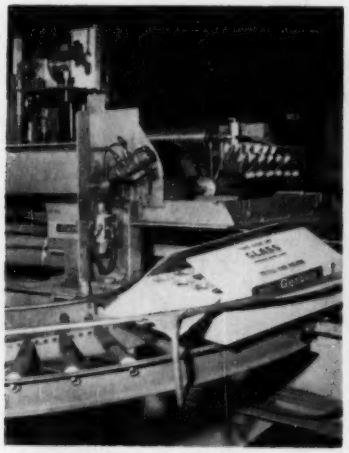
Here's the How of It

Now for details of the current operation of this integrated line:

One man feeds cases (flap-side up) onto a 1½x6-ft. canvas-belt conveyor equipped with guide rails. A timing mechanism, actuated from spacer bar on flat-opening chain drive, synchronizes delivery of cases to flap-opening machine to prevent jam-ups.

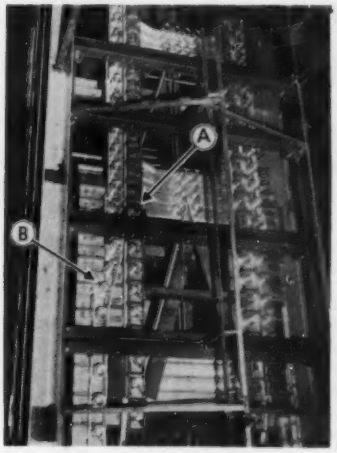
Proceeding to the flap-opening unit, cases ride cross-wise on a 9-ft. chain belt with spacer bars on 33-in. centers. In sequence, trailing flap is opened by a shaft-mounted pin and a pair of rubber rollers (5½-in. dia.); lead flap is raised by "jetted" air and a short roller, and the two end flaps by compressed air and a center plow.

Cases are now pushed onto the guide-bar section of a reject mechanism–spring-loaded parallel bars, limit switch, and electro-pneumatic valve–that discards cartons that present closed flaps or inverted jars. Discarded shippers are chuted back to



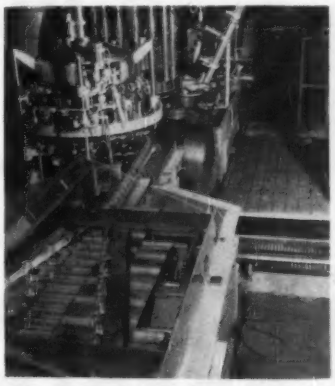
FLAP OPENER: Outer and inner flaps are automatically lifted out. If a flap doesn't open, or jar is inverted, case is pushed aside by rejecting device.

UNCASER: Expandable rubber fingers hold jars while carton drops to take-away conveyor. Containers are then deposited on steel plate of single filer.



WASHER: Jars are plowed to pockets (A) that carry them through washer. Then they're shunted to chain-mounted spacer bars (B) for travel to filler.

Ends Jar-to-Jar Contacts



CONVEYOR: Accelerated chains merge two rows of jars into single file just ahead of filler. Rubber starwheel assures safe positive flow.

the feeder station for correction and re-feeding.

Normal cases proceed to the unloader, which comprises an endless chain (7½-ft.) with eight unloading heads. Each head consists of 24 soft rubber "fingers" with center metal rods.

The Gentle Touch

Fingers descend into the jars, then expand to a snug fit while the case drops down to a right angle carry-away conveyor. Empty cartons move first to a labeler, then to the case-packing point for insertion of filled jars. A limit switch stops the line if a case fails to discharge onto carry-away belt.

After case is released, jars are deposited (½-in. drop) in their case pattern onto series of single-filer pallets mounted on a 20-ft. chain. Proceeding to the 8-ft. washer, jars (with fingers now removed) are automatically transferred from the plate in two continuous jar washers along either side of the machine.

Washer pockets loosely hold the jars just below the cap finish as the containers, in two complete passes, are cleaned by jets of 190F. water (50-lb. pressure). Following heating and draining two rows of jars are transferred continuously onto a flat-top chain conveyor equipped with positioning flights.

To provide the filler with a continuous feed, rate of jar travel is accelerated in two stages by shunting jars on either side of the conveyor onto two parallel moving chains, each of which runs at a faster speed. Here, too, spacer bars prevent glass-to-glass contact.

As the jars transfer from chain to chain, they're spaced farther apart so that they can converge into a single file just ahead of the filling point.

Jars are fed by starwheel to 25-pocket rotary filler (Librascope). A second starwheel feeds full jars to a 16 twin-head rotary capper (Anchor-Hocking). Machines were specifically built with a center to center jar spacing that would give positive and smooth glass transfer between units.

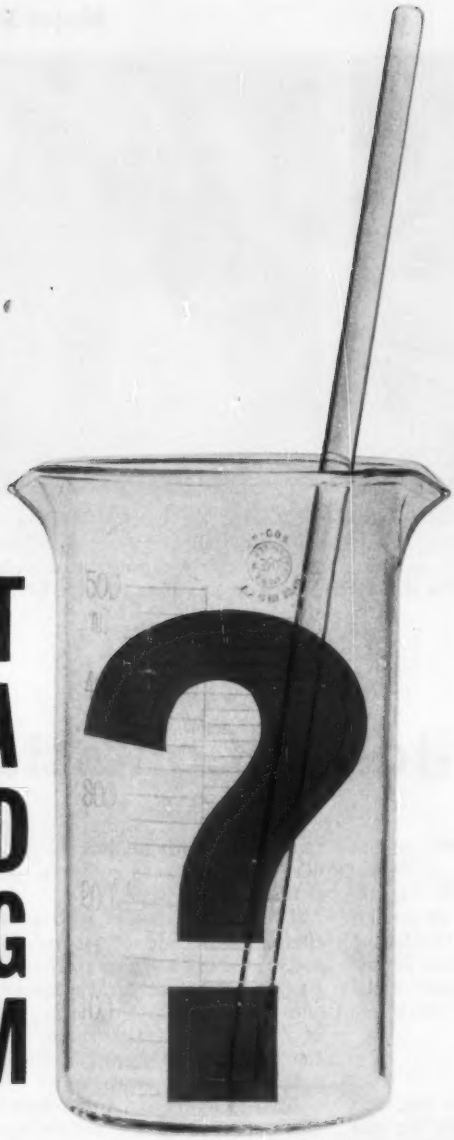
New Resiliency

The rubber starwheels minimize breakage at filling and capping points, since the previous metal worm-feed, with its metal-to-glass contact, tended to break jars that weren't positioned perfectly—especially when the line was started up abruptly.

For smoother synchronization, the line has three hydraulic motors (Oilgear) located at uncaser, filler, and capper. These are operated by a remote electrically driven variable displacement pump (10 hp.) Hydraulic drive accurately controls acceleration rates, cushions the strain on machine parts, and eases braking when decelerating.

With the power spread from the three motors to the several drive shafts—located at the flap-opener, accumulator, unloader, washer, filler, and capper—all components are able to run at proper speed-time relationship. This means that the individual units can be timed to one another without affecting other timing points.

—FE Staff



GOT A FOOD PROCESSING PROBLEM

Sunkist technical advisers...over 400 different citrus products for industry...can help you solve it!

SUNKIST KNOW-HOW produces the finest citrus products to be had. That same know-how—the backlog of more than 60 years experience—and those citrus products—over 400 of them—can help solve your food processing problem.

Every course on the American menu has profited from Sunkist research or Exchange products. We've made a good condensed soup glorious by adding a few ounces of Exchange Lemon Juice to *100 gallons* of it. We have stopped pies from "bleeding" by using Exchange Low Methoxyl Pectin in the filling.

And between soup and dessert, we've devised enough manufacturing processes for the benefit of the American food processor to get Sunkist 118 separate U.S. patents!

Sunkist technical experts will be glad to work *with* you—in your own plant—or *for* you—in their own citrus research department. Write—or, if it's urgent, telephone—and a Sunkist man will call on you.

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PRODUCTS DEPARTMENT • ONTARIO, CALIFORNIA

EXCHANGE BRAND CITRUS PRODUCTS widely used by leading food processors include: *Lemon Juice...Orange Juice...Orange Oil... Lemon Oil...Frozen Orange Puree...Frozen Lemon Puree... Preserver's Pectin...Low Methoxyl Pectin.*

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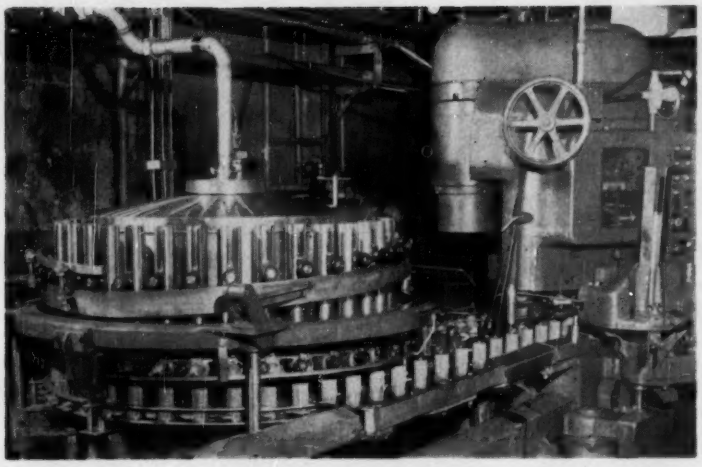


600 CANS/MIN. are accurately filled with partially frozen concentrate by 35-station unit. Machine can handle up to 1,000/min., but synchronized closer (seen right) is rated at only 600/min.

Filler Downtime Slashed 90%

Pasco gets maximum use from high-speed, precision-fill unit . . . Cleaning time alone cut from 4 hr.-plus to 1 hr. by "easy-reach" parts

MACHINE DOWNTIME—always a problem, and particularly when you're running a highly perishable product at extra fast rates—has been slashed 90% at Pasco Packing by a new filler that features ease of servicing and precision-fill accuracy.

This leading citrus concentrator, headquartered at Dade City, Fla., tested the unit last season as part of a plant expansion that lifted daily output to 130,000 gal.

Only about 1 hr. is needed to clean the 35-station rotary piston machine (Pfaudler), compared to the 4 hr.-plus it took to dismantle and wash down previously used units. Pistons and valves are simply lifted out—no special tools are necessary, and no other parts have to be removed.

Only three manual grease fittings require attention, since all other lubrication is automatic. An electric braking mechanism assures smooth operation and eliminates stresses caused by backlash in filler and closer gears.

Maintenance costs and product waste are curbed by the machine's fill accuracy ($\pm\frac{1}{16}$ fl. oz.). Helping out here are small volume pistons and cylinders that are machined to extremely close tolerances, also a micrometer fill adjustment acting on a single adjustable cam track.

Other Dividends

Additional features that boost efficiency include: (1) Air actuated "no can-no fill" device that operates at all operating speeds, (2) immersion of all gears in oil for smoother functioning, and (3) lubrication of most other moving parts by a self-contained oil pump.

So rapid is the filling speed of the unit (600/min.) that the cans must be tilted inward to offset the effect of centrifugal force, which otherwise might cause spillage. Can tilt is varied by adjustable support rails to suit product viscosity and machine speed.

Accommodating can sizes up to 16-oz., the filler will handle virtually any liquid or semi-liquid product.

In a move reflecting the crop situation, Pasco recently announced it will discontinue production of single strength juices and fruits this current season. Firm will continue with frozen citrus products.

—*FE Staff*

. . . proved in use for high efficiency, low cost DRY SEPARATIONS

From oats to popcorn, sesame seed to dehydrated garlic, corn to chemicals—you can treat dry granular products with low-cost efficiency to remove dirt, rodent pellets, weed seed or other objectionable material.

Electrostatic separation with the new Dings CORONATRON is the secret! Multiple separation zones in vertical arrangement deliver high capacities at 99% purity with no further treatment.

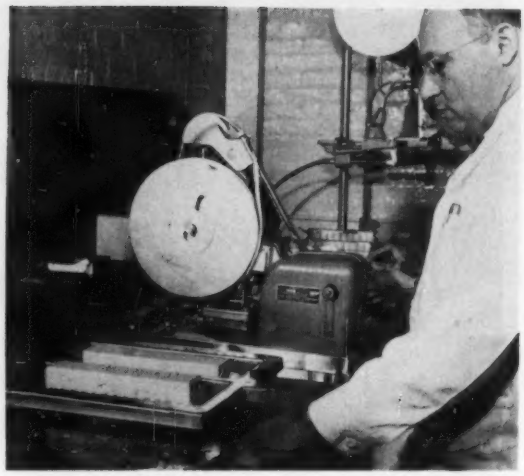
The CORONATRON, with economical low intensity design or with the exclusive patented sparkless electrode for safe high intensity operations, has been thoroughly job proved in food processing, milling, seed, grain and chemical industries. Its many profit-making features are well worth your investigation. Write today for literature.

Dings ES-258½

DINGS MAGNETIC SEPARATOR CO.
4741 W. Electric Ave., Milwaukee 46, Wis.

Here's the How of

SMALL WEDGES of aged cheddar, with pull-tab, are broadening market for Boston custom packer. For retail, there are 11½-oz. packages—for institutions, 2-lb. units.



CUTTER, demonstrated by President Pagliuca, slices two cheese sticks at a time into wedge form. Trick is accomplished by specially designed head and angled wires.

Pull-Tab Cheese Scores

Old favorite—snappy cheddar—gets new boost with interleaved bite-size wedges that answer demand for easy-use product . . . And "pouch-within-a-pouch" assures longer shelf-life

"WANTED—small chunks of good cheese that can be served 'as is' without fuss . . . a cheese that doesn't need to be rewrapped and that won't spoil in the refrigerator even though kept there a long time."

This was the consensus turned up by Custom Cut, Boston packer, when that firm was sounding-out consumers on what they wanted in the way of cheese packaging. The firm's solution: Pre-cut, bite-size wedges of quality aged natural cheddar cheese which are interleaved with a cellophane pull-tab for easy extraction of desired amounts, and put up in a vacuum pouch. Advantages: Added convenience for consumer, and longer product shelf-life.

Initial sales have been so impressive that the packer is now experimenting with other cheeses in this new package.

According to President Fred Pagliuca, edam and loaf cheese have worked out well here. In fact, he says, any cheese in block form that has a fairly solid consistency should do the trick. This rules out something like blue cheese, but a kind like provolone is suitable.

Outside interest in the new convenience package is mounting. S. S. Pierce, a regional group of quality specialty stores, is readying plans to introduce the pull-tab cheese under its own brand. And it's reported that at least one big-name marketer—Kraft—is watching consumer reaction as a guide to its own plans for adding the item to its product line.

H. P. Hood & Sons, New England's largest dairy, was the first firm to put the wedges into broad distribution. The dairy is servicing institutional accounts with the product as part of a continuing diversification program.

Foods Div. Mgr. Cleveland Gilcreast states: "We're continually on the alert for a product package that offers quality protection and convenience as well as portion and cost control. This Redi-Cut cheddar more than fulfills these strict requirements."

Creating The Package

Product protection and easy-use features of the new package are the result of extensive research and machinery improvisation carried out by Custom Cut. Idea for the pull-tab came to Pagliuca after a probe of homemaker practices pertaining to cheddar cheese.

Research showed that housewives who bought cheddar used part of it and stored the rest in the refrigerator. Then, when they tried to use the remainder later on, they often found the product to be dried out or moldy.

Biggest problem in the development phase was finding a strong, acid-resistant pull-tab. Several varieties of plastic films, as well as paper, were tried in the search for a tape that wouldn't crack under refrig-

INTERLEAVING is done by hand-weaving roll of cellophane through deck of wedges. Product is then bagged.

FINAL step is at vacuumizing machine, which withdraws air from package, provides tight clip closure.

Merchandising First

erated storage, snap in two when the housewife pulled out the last few wedges, or deteriorate from the effect of fatty acids.

In the end, an MSD type cellophane (DuPont) proved most effective.

Ups Shelf-Life

A secondary benefit of the pull-tab is that it helps prolong product storage life.

After vacuum-packing and clip-sealing (Cryovac C-W unit), the final product goes through a hot water bath that shrinks the film to a tight fit and causes the natural fats to move to the cheese surface. Acting in concert with the interleaved strip, the fats tend to "pouch" the wedges in a "vacuum within a vacuum."

According to Pagliuca, cheese wedges packed a year ago last August still retain their original snappy cheddar flavor.

Up to now, processing and packaging are mostly manual. Standard 40-lb. cheddar blocks (7x11x14 in.) are cut into rectangular strips, then are sliced into wedge form with a special cutter designed by Pagliuca. Starting with a conventional pneumatic cutter (Strasbaugh), he tailored the unit to his own needs with special plastic dies so that the slicing head fits snug over two strips at a time. Angled wires neatly wedge-cut the product.

Wedges are then interleaved with a continuous strip of cellophane and packaged by hand. Each operator handles the equivalent of about 4½ blocks an hour.

At present, Custom Cut is offering two 11½ oz. retail packages—18 wedges of aged Wisconsin cheddar, and 16 wedges of aged New York cheddar. Then there is a 2-lb. unit for institutions.

Being priced around 69¢, the retail packs are competitive with conventionally packaged cheddar.

Package instructions tell the housewife to slit the bag on a dotted line that runs along three sides, then pull the inner cellophane strip to separate the wedges. For storing in the refrigerator, all the housewife need do is snip off the exposed part of the strip and fold back the flaps of the bag.

Pagliuca sees the package helping out in long-range shipments, where limited storage life of cheddar is a problem. He also sees the curbing of cheese shrinkage and molding, minimizing losses in product returns. —*FE staff*

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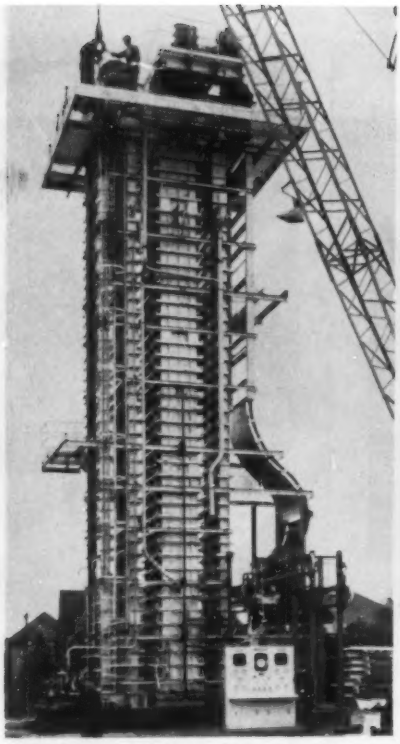
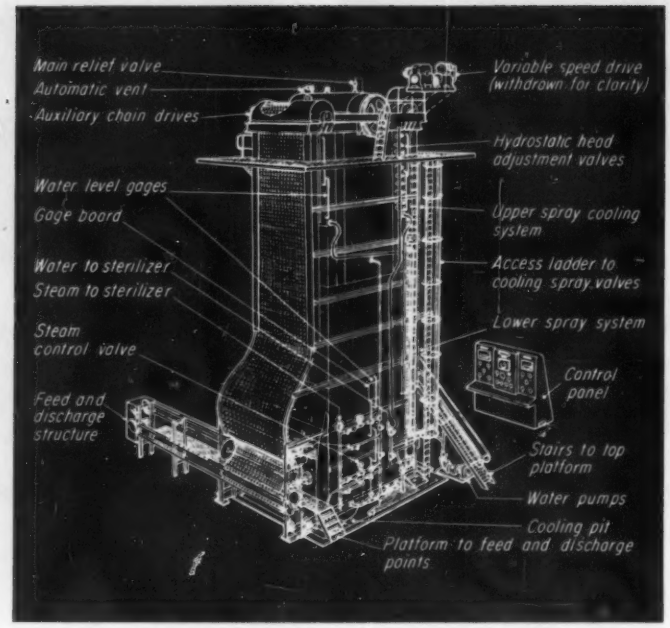




NEW BRITISH STERILIZER employs water columns instead of transfer valves. Left: Unit now being installed in Canadian Heinz, Leamington, Ontario, is 65 ft. tall, has 800 cpm. capacity at 260F. Right: Schematic of unit.

Sterilizer Ups Canned-Food Quality

RETENTION of the natural color and form of fruits and vegetables in can packs—a top goal of both processors and equipment manufacturers—is now being achieved with an improved continuous sterilizer that substitutes water columns for transfer valves, thus eliminating sudden changes in temperatures and pressures.

The sterilizer also features: Great flexibility as to capacity and range of can sizes handled; economy of steam and water, and outstanding mechanical reliability. And it's possible, with the latest development, to process 1,400 can per min.

Manufactured by Food Machinery Div., Mitchell Engineering Ltd., Peterborough, England, and used extensively in the British Isles, one of the units is now being erected in Leamington, Ontario.

The machine is produced in two types—high temperature (240-260F.) and low-temperature. Both employ identical conveying systems and differ only in the method of reaching and holding temperatures.

LESLIE ROBINSON
Project Engineer, Mitchell Engineering Ltd., London

The high temperature sterilizer (photo and drawing above, and Fig. 1) employs columns of water in the bringing-up and bringing-down legs to exert a pressure equal to that of steam within the sterilization and cooking compartment. This hydrostatic head varies according to the maximum temperature required—35 ft. for 240F., 45 ft. for 250F., and 56 ft. for 260F.

Filled cans are conveyed from seamer at about 170F, and delivered to feed mechanism, where they are loaded into can carrier bars. Then they enter preheater section, where temperature is raised to about 185F. Cans next move into bringing-up leg and are conveyed in a downward path through water of progressively increasing temperature, reaching 5-10 deg. below that required for processing at base of leg.

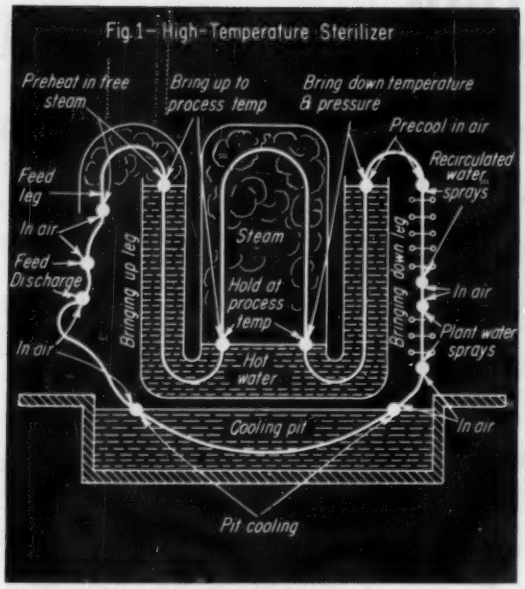
Cans then enter steam sterilizing compartment without encountering sudden changes in either external or internal temperatures or pressures. After they are held for a pre-selected period, they enter the water seal and begin to ascend the bringing-down leg, where temperature and pressure are progressively reduced.

Cans Handled Gently

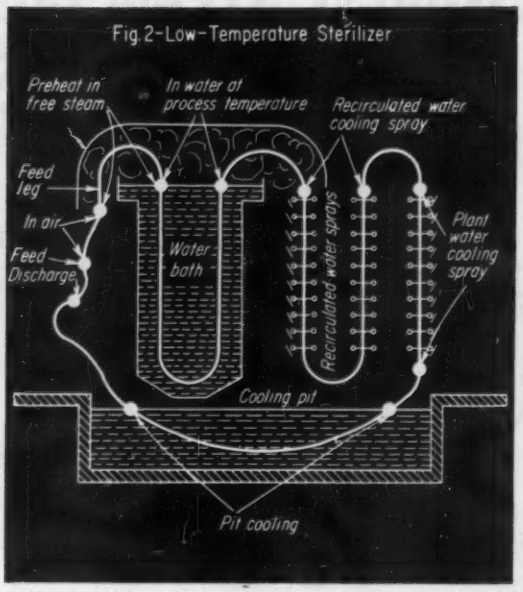
Throughout the entire process, cans are lying on their sides, and only at curves are they rotated (gently through 180 deg.).

When leaving the outlet water seal, cans have a temperature of approximately 195F. and, after a short period of air cooling, enter the spray cooling system.

Upper two-thirds of this system employs recirculated pit water at a temperature of 70F. Lower one-third is supplied with plant water at approximately 50F. This method minimizes introduction of contaminated water during the critical period when can is drawing its vacuum. Moreover, the final cooling step can be used to adjust temperature of



IN HIGH-TEMPERATURE UNIT, cans are conveyed consecutively through bringing-up leg, steam processing area, bringing-down leg, and various cooling stages to discharge point adjacent to in-feed.



FRUIT STERILIZER does not require hydrostatic head in attaining 218F. processing temperature. Cans are conveyed through steam preheater to water bath, held for required time, then cooled by multiple sprays.

Hydrostatic unit features high capacity, versatility, operating economy . . . handles multi-size cans simultaneously

cans, and can be cut out entirely if warranted.

Finally, cans are discharged onto a belt that conveys them to the labeling and packing department.

Re Low Temperature Unit

The atmospheric fruit sterilizer (Fig. 2) is similar in operation to the high-temperature unit although, at the low temperature employed, a hydrostatic head is not necessary. This machine reaches a maximum temperature of approximately 218F. at base of the water bath. Conveying system is identical to that used in the larger machines. However, the cooling system is usually split into two or three vertical legs.

Due to bringing up in water legs through an even temperature gradient, it is possible to process widely differing sizes of cans. This is due to the conveyor's slow speed, which allows more time for heat penetration to center of pack.

Shape and position of cans during their passage through the process is also important. By conveying them with their longitudinal axes in the horizontal plane, the tendency to packing or compression of products in base of can is avoided.

Carrier bars (either single or twin) consist of specially extruded alloy sections. They are bolted between twin matched roller chains.

The single sided bar was an early development but is still used on smaller capacity fruit sterilizers. The twin bar was a logical advance that immediately doubled machine capacity.

Guided by closely associated tracks, the roller chains, should they break, would settle into the guides, causing little or no damage to carrier bars. If a chain should break, the machine can be shut down and a temporary repair made. Then conveyor can be run until the break is moved to an accessible position. At no time can the chain disengage from the tracks due to the spacing effect of the carrier bars.

Conveyor chain pitch and carrier bars are designed so that it is possible to process several different can sizes without use of change parts. In all cases, however, chain pitch selected is the smallest that will handle the largest diameter can to be processed.

By means of a special feed and discharge mechanism, up to four sizes of cans may be handled simultaneously without mixing. Speed of main conveyor does not exceed 6 fpm.

Instrumentation and Control

Main conveyor drive, located at top of machine, consists of a variable speed unit driven by an electric motor. Between pre-set limits it can be remotely controlled by buttons at the console containing the tachometer indicating processing time. Also included on the console are temperature and pressure recording and regulating instruments, plus motor control gear.

Temperature within the steam compartment, hydrostatic legs, and water seal are controlled by air-operated diaphragm valves. This permits maintenance of a temperature differential of 5 deg. between seal and steam chamber, thus insuring against boiling. Diaphragm valves are of the 'fail to safety' pattern and, in the event of air line or instrument

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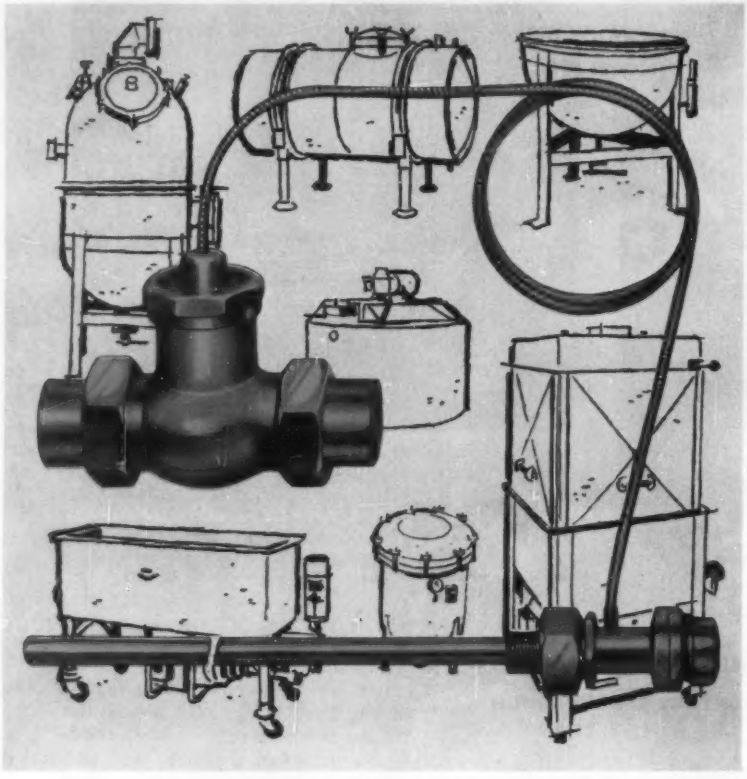

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breakdown, shut down the steam heaters.

Should this feature become inoperative, an overriding vent system will bleed off excess steam to regain the working hydrostatic head.

An additional steam economy is achieved by a contra-flow ejection system located between tops of bringing-up and bringing-down legs. This system transfers water between the legs, and thus compensates for cooling effect of cans on bringing-up leg and heating effect in bringing-down leg.

Feeding and Discharging

On both single and twin design, the feed and discharge units are notable for simplicity of operation and construction.

In the feed unit, an endless belt passes horizontally across the front of the machine. From it cans are injected directly into the conveyor carrier bars which, at this point, are opened to accept them.

By means of a synchronized pneumatic brake, cans are built into stacks of a length acceptable to the carrier bars. On release, the stack is conveyed across the machine and injected into the bars by a timed pneumatic pushbar.

Cans leave the conveyor a short distance before the machine's discharge point and are pushed up a plate by the leading edge of the carrier bar in which they were previously contained. As they reach top of plate, cans fall onto the discharge belt in a complete stack and are conveyed away from the machine.

On several machines a multiple feed and discharge system has been incorporated, which accepts four lines of cans of either differing products or grades of the same products, or differing sizes. It charges each side of the conveyor on alternate carrier bars. Discharge is similar on twin belts, but at no time is it possible for individual lines of cans to become mixed.

Speed of feed and discharge belts is set according to specified processing time with any particular machine. However, a small adjustment to the pneumatics can be made quite easily.

Particular care has been taken to insure ease of maintenance. Access is provided to the interior for inspection and cleaning. All bearings are external, thus easing lubrication.

Extensive trials with both fruits and vegetables have proved that the system is capable of producing packs of very high quality. —*End*

Makes Better Bread Continuously

New technique employs compact package unit to quickly convert ingredients into matured dough

GREATLY IMPROVED texture and flavor of the finished bread are among the benefits of a new continuous dough making process employed by Fischer Baking Co., Asbury Park, N. J.

And although the process hasn't been publicized, customer reaction to bread made by it, during the development period and since installation of the perfected equipment, has demonstrated its high acceptability.

Requiring only two operators to produce 4,000-6,000 one-pound loaves of white bread per hr., the new technique—

1. Takes but one-fourth the floor space of regular batch method.
2. Cuts give-away through more accurate weighing of dough pieces.
3. Permits use of conventional blends of flour.

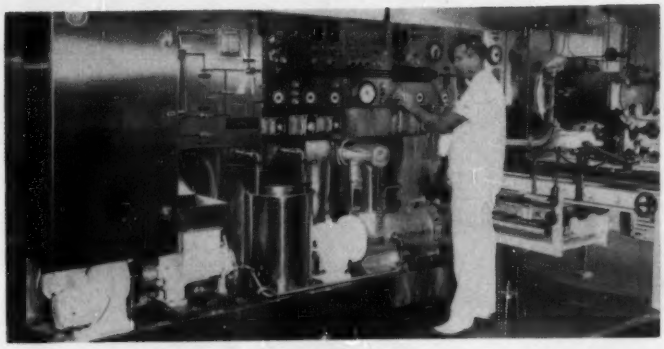
Developed by American Machine & Foundry Co., the new system accomplishes in one continuous operation the functions of three separate baking departments—mixing, fermentation, and make-up.

Used are three basic groups of equipment: (1) Fermentation, (2) mixing, (3) power-control systems. Major components of the fermentation system are: A blending tank, two holding tanks, and a fermentation trough, each equipped with specially designed agitators.

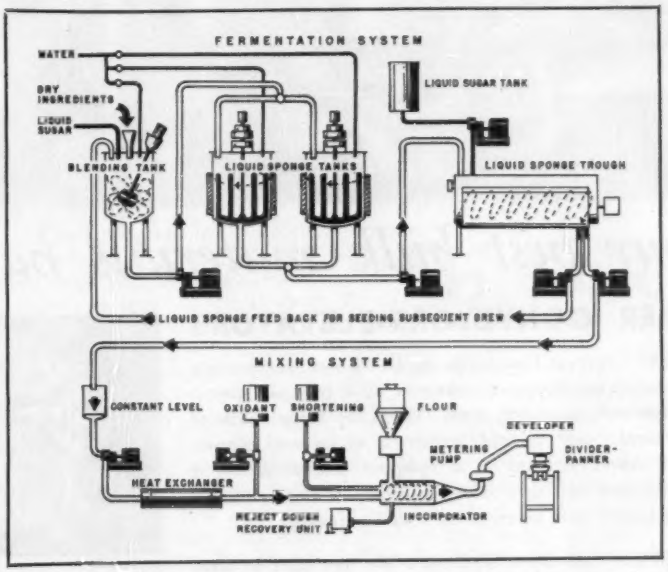
Salient step in the process is production of a "liquid sponge" by combining early and late products of fermentation—yeast, a nutrient mix, and water—in the blending tank.

After 1 hr. of vigorous agitation, salt, milk, and 10-16% of the total flour are added, then sponge is pumped to one of the two holding tanks. Here remainder of water is added and mixture is slowly agitated for 1 hr. at 86-90F. Continuous processing is achieved by filling the two tanks alternately.

Liquid sponge is then pumped to the horizontal fermentation trough, where remainder of sugar is incorporated. During the hour required to move the sponge through this trough, it is mildly agitated.



MIXING SYSTEM is keyed by graphic panel from which operations are controlled. As sponge moves from left to right, oxidant, shortening, and flour are added and thoroughly mixed in incorporator (center). Matured dough is panned (right), then conveyed to proofing area.



HOW PROCESS STEPS are linked in non-stop dough making operation.

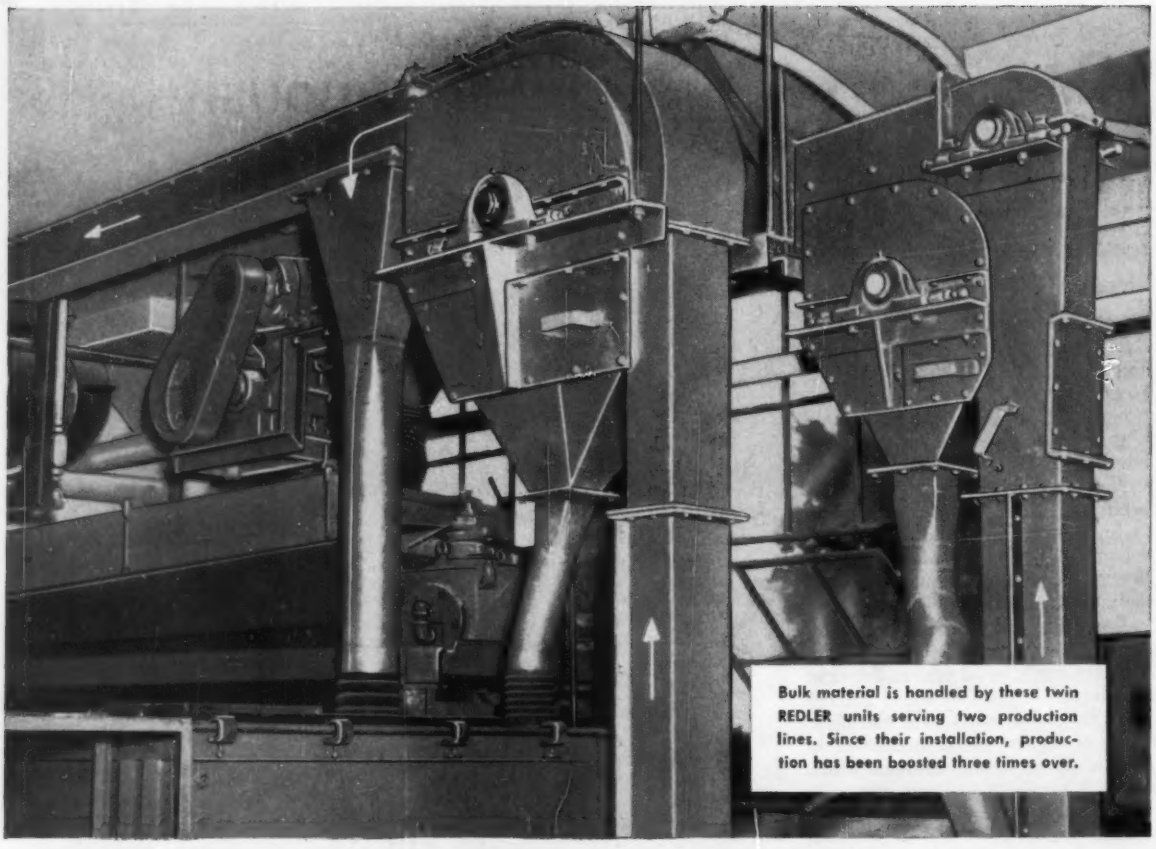
This completes the fermentation phase and the matured sponge is fed from discharge end of trough to a constant-level tank in the mixing system. However, a small quantity of sponge is returned to blending tank to seed subsequent batches.

First mixing step is cooling the sponge (from the 86-90F. of fermentation) by pumping it through a refrigerated heat exchanger.

Next, sponge goes to the incorporator, where shortening, oxidizing agents, and remainder of the flour are automatically added. A variable-pitch screw thoroughly mixes these ingredients with the sponge, forming a homogeneous mass, which then moves to the developer.

Here, counter-rotating, double-arc paddles shear and stretch the mass into a finished dough, which flows to the divider-panner. This unit deposits desired-size pieces in pans on conveyor that moves them to proofer.

Operations are controlled from graphic panels that provide information relative to ingredient proportioning, flow rates, temperature variations, and pressures. And a system of alarm bells and lights alerts the operators in case of failures.—*FE Staff*



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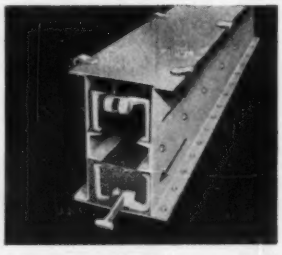
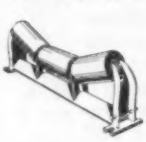


Cross-section view shows material being conveyed in lower run and empty flights returning in upper run to complete the circuit. There is no metal to metal contact. REDLER installation requires little headroom.

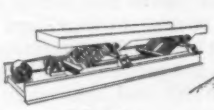
Exclusive skeleton type flights, shown above, are linked together and used to move the material forward in a steady non-agitated flow. Chain readily curves around corners, moving material with one unit, one drive.

STEPHEN S-ADAMSON

THE BIG NAME IN BULK MATERIAL HANDLING EQUIPMENT



CARRIERS



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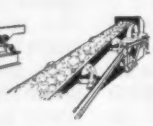

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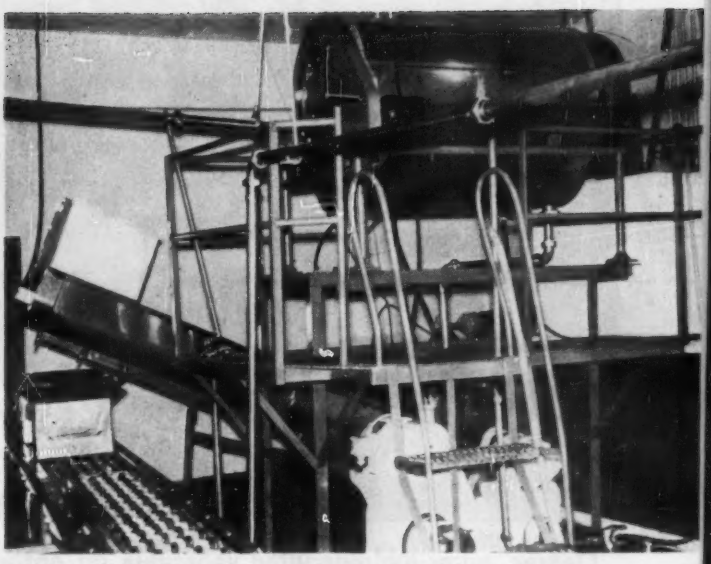
Cheesemaking Automated

New process eliminates laborious, time-consuming cheddaring and salting steps, ups yield of quality product



IN NEW PROCESS curd-whey mixture is pumped from cheese vat to rotating, perforated drum (top) where whey is separated. Curd falls into compression chamber (right) where it is pressed for 2 hr., then sliced, milled and salted as it is conveyed to metal hoop (left).

MECHANIZATION of cheddar-cheese processing—a long-time goal of dairy technologists—is now an accomplished fact.

This has been demonstrated at the Adams, N. Y., cheese plant of Dairymen's League Cooperative Assn., where over the past two seasons almost a million pounds of high grade cheddar have been produced by a new technique called the Ched-O-Matic. (patent applied for)

In addition to producing cheese equal in quality to that which this plant made by standard methods during the same period, the new technique—

1. Cuts more than 1 hr. off conventional time per vat.

2. Reduces manufacturing costs approximately 1¢ per lb.

The new process makes no changes in the accepted methods of setting the milk in conventional cheese vats, and cutting and cooking the curd.

From this point, however, operations have been mechanized. Whey is drained from the curd continuously, then the curd is hydraulically pressed into one large block, where it is held while desired acidity develops. This step replaces the laborious manual cheddaring operation.

The block is automatically sliced and milled, then the shredded curd is continuously salted as it is conveyed to the hooping station.

Operations Pin-Pointed

As stated, the following steps are conventional:

1. Filling of cheese vat with raw, preheated, or pasteurized milk, as desired (14,000 lb. at Adams).

ARTHUR V. GEMMILL and HENRY LEBER

Respectively, Senior Associate Editor, "Food Engineering" and Technical Supervisor, Dairymen's League Co-operative Assn.

2. Inoculating with lactic starter and adding rennet.

3. Cutting and cooking (standard temperatures used).

After the customary 30-min. cooking period, mixture of curds and whey is pumped (Waukesha 55B unit) from vat to a slightly pitched, rotating perforated cylinder. As the drum turns, the tumbling of the curd frees the whey, which passes through the perforations.

A spiral baffle in the cylinder moves the curd toward the discharge end, where it drops into a special compression chamber that holds the output of one cheese vat. This chamber has a removable screen in the bottom through which whey drains during the approximately 2-hr. holding period.

Object of the holding is to: (1) Attain desired acidity of 0.5-0.6% in the curd, (2) reduce moisture content to 35-40%, and (3) produce the texture and stretch usually associated with conventional cheddaring.

A special plate that fits snugly into the chamber is placed atop the curd, and a hydraulic pressure of 150 lb. is applied. This produces about 1.8 psi. on surface of the block. A unique, hydraulically operated parting knife and horizontal partition are located in the bottom of the chamber. A pusher plate for forcing slices of curd through a cut-out section in side of chamber, and a vertical knife are also incorporated in the chamber.

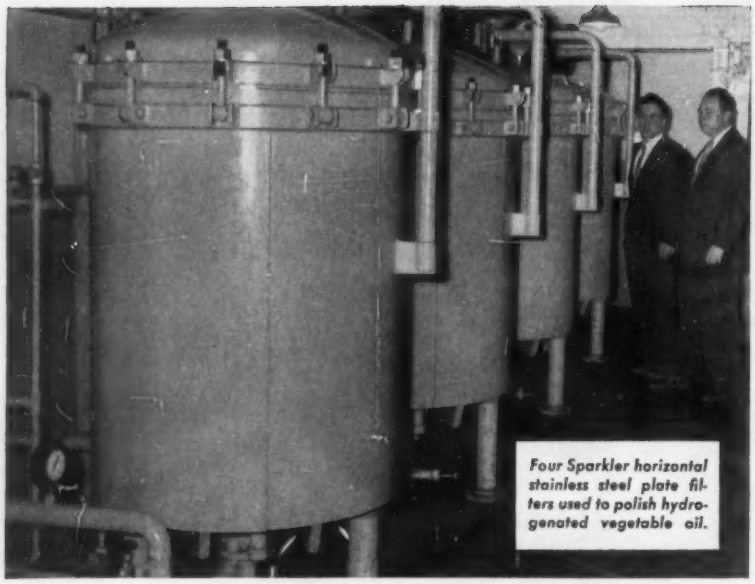
Just before the desired acidity is reached, bottom screen is removed. When curd block is properly textured—as determined by acidity measurements—horizontal parting knife moves forward, cutting a 2 in.-thick slice from its bottom. Then pusher plate forces this slice through the cut-out section of the chamber. Here, the vertical knife cuts it into 6-in. wide sections. The strip (approximately 24 x 6 x 2 in.) falls onto a conveyor that feeds a curd mill.

This horizontal and vertical cutting is continued until the entire block (approximately 1,300 lb.) is fed to the mill.

Shredded curd drops onto bottom end of a screw conveyor elevated at about 60 deg. As it moves up the worm, the curd is sprayed with warm salt solution that is absorbed during the approximately ½ min. required to move milled product to hooping station.

If desired, warm water may be introduced ahead of the brine. This makes it possible to wash out traces of whey not previously removed.

By this method it has been found possible to produce cheese with a salt content as high as 1.7%. That made at Adams, however, has averaged about 1.4% salt. Surplus brine



Four Sparkler horizontal stainless steel plate filters used to polish hydrogenated vegetable oil.

Clearer, purer hydrogenated vegetable oil obtained with

Sparkler Filters

SPARKLER horizontal plate FILTERS

At Anderson, Clayton & Co., Foods Division in Sherman, Texas, four Sparkler 33" diameter horizontal stainless steel plate filters are used to polish hydrogenated vegetable oil after it has been deodorized. Several batches of oil are filtered before a change of filter media is needed.

But when changes are required, clean plates are installed quickly in a most resourceful manner. A hoist simply lifts the filter plate cartridge through an opening in the floor above, a clean cartridge is lowered into the filter and the filter is back in operation in a matter of minutes.

Sparkler all stainless steel filters used in experimental laboratories.

This installation also employs two Sparkler all stainless steel filters, one to remove bleaching clay and the other to remove minute nickel catalysts from experimental batches of hydrogenated oil. This difficult separation of the nickel catalyst is accomplished through the use of Filtercel aid in the Sparkler filter.

Sparkler manufactures stainless steel filters in capacities up to 10,000 gallons per hour with completely accessible, easy to clean surfaces conforming to standard sanitary requirements in the food field. Special filters are engineered for special requirements. On your next food filtration application, consult with Sparkler.

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that drains from conveyor housing may be collected, purified, and added to subsequent batches.

Salted curds move rapidly to top of worm and drop into hoops on a wheel conveyor. The hooped cheeses are then pressed and ripened in the conventional manner.

The curd, as it leaves the compression chamber, has a very porous appearance. However, it tears with the stringy characteristic of a high quality curd at end of the conventional cheddaring step.

To enable better and quicker salt absorption, it was found advisable to mill the curd into somewhat smaller pieces than is ordinarily done.

Experiments with washing the curd with warm water sprays showed the importance of this step in obtaining a superior product with typical cheddar flavor.

Moisture control is largely accomplished in the vat. Excessive stirring after cooking to a somewhat higher than normal temperature resulted in finished cheese with 34.8% moisture. But cheese made from normally handled vats ranged between 36.% and 38.5% moisture.

Losses of fat and protein in whey passing through perforations in the cylinder were approximately the same as those encountered in the traditional cheesemaking.

Average yield from 100 lb. of 3.5% milk was 9.2 lb. of cheese. This is an increase of 3.4% over published figures for New York State factories.

Quality of the cheese made by the Ched-O-Matic method has been pronounced uniformly good to excellent. Flavor was true to type and generally without any obvious defects.

Body of the cheese is firm and waxy, and during ripening it breaks down normally and has a typical pleasing cheddar flavor. Some of the cheeses were open in texture, which could be construed as a defect. However, samples submitted for judging at the New York State Fair this year scored above 97—somewhat higher than average. Incidentally, samples of the League's regular and Ched-O-Matic cheddar tied at the Fair.

From setting of milk to cooking of curd there is no time difference between the new technique and the conventional method. But in the mechanized stage, a saving of at least 1-hr. is effected.

Since the time required for each of these stages is approximately the same, installation of the new equipment should practically double the capacity of a cheese vat. —*End*

JENKINS PRACTICAL PIPING LAYOUTS

82

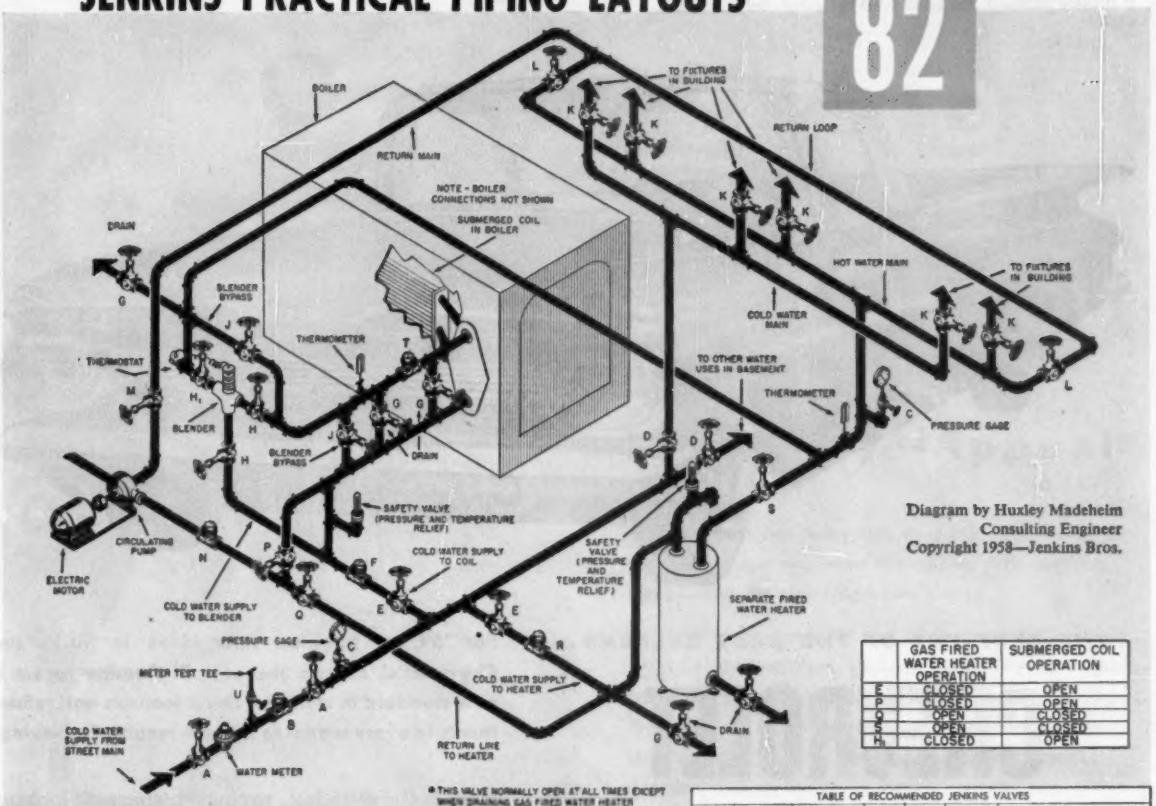

Diagram by Huxley Madeheim
Consulting Engineer
Copyright 1958—Jenkins Bros.

	GAS FIRED WATER HEATER OPERATION	SUBMERGED COIL OPERATION
E	CLOSED	OPEN
P	CLOSED	OPEN
Q	OPEN	CLOSED
S	OPEN	CLOSED
H_1	CLOSED	OPEN

How to plan piping connections for

A HOT WATER SUPPLY SYSTEM

using both Submerged Coil and Separate Water Heater

Continuous hot water for general use is a requirement of many small office buildings, taxpayers, stores, and sections of multi-story buildings. In this layout, two conventional methods of supplying hot water are shown in combination, assuring continuous supply throughout the year with a minimum investment and maximum convenience.

A submerged coil utilizes as a heat source the main boiler whose primary function is to furnish heat for the building. A separately fired heater is employed to provide continuous hot water should the main boiler be shut down during the non-heating season or for maintenance. Connections to both units of hot water generating equipment are arranged so that change-over involves only the operation of valves. The distribution system shown incorporates a circulating pump and return loop, to guarantee hot water at the fixtures at all times.

A Blender valve with the submerged coil permits tempering water to desired temperature, and is equipped with bypasses to permit blender maintenance and emergency repairs without a shutdown. The separately fired heater has its own thermostatic control, so does not require a blender valve.

Safety valves protect both hot water generators. These valves are installed without shutoff to prevent damage and especially damage from possible steam generation in the separately fired heater. Also, it is recommended that cold water admission valve "E" to this heater be left open at all times, except when draining heater, to prevent formation of a vacuum or burning of heater if evaporated dry.

Bronze valves are used throughout because they give best service with most conditions of city water. All gate valves are of the traveling spindle type, which indicate position of wedge.

Jenkins Fig. 106-A screwed end bronze globe valve, (or its equivalent Fig. 1270 with socket ends, or Fig. 1270 with solder ends), is used extensively throughout this piping layout. Its renewable composition disc assures drop-tight closure, and it incorporates many other design and construction features which mean economical maintenance and long, trouble-free life.

TABLE OF RECOMMENDED JENKINS VALVES

Code	Quan.	Screwed	Socket	Solder	Type	Service
A	2	Fig. 47-U	1273	1242	Gate	Shutoff Cold Water Supply
B	1	Fig. 92-A	1272	1222	Check	Prevent Backflow to Main
C	2	Fig. 743-G			Needle	Control Pressure Gage
D	2	Fig. 47-U	1273	1242	Gate	Shutoff Cold Water Dist. System
E	2	Fig. 106-A	1270	1200	Globe	Control Cold Water Supply to Heaters
F	1	Fig. 92-A	1272	1222	Check	Prevent Backflow from Coil to Main
G	5	Fig. 106-A	1270	1200	Globe	Control Drains
H	3	Fig. 47-U	1273	1242	Gate	Shutoff Blender
J	2	Fig. 106-A	1270	1200	Globe	Control By-pass about Blender
K	6*	Fig. 106-A	1270	1200	Globe	Control Water Supply to Individual Fixtures
L	2	Fig. 106-A	1270	1200	Globe	Control Flow through Return Loop
M	1	Fig. 47-U	1273	1242	Gate	Shutoff Suction Circulating Pump
N	1	Fig. 92-A	1272	1222	Check	Prevent Backflow through Circulating Pump
P	1	Fig. 106-A	1270	1200	Globe	Control Flow Return Water to Coil
Q	1	Fig. 106-A	1270	1200	Globe	Control Flow Return Water to Heater
R	1	Fig. 92-A	1272	1222	Check	Prevent Backflow from Heater to Main
S	1	Fig. 47-U	1273	1242	Gate	Shutoff Hot Water Supply from Heater
T	1	Fig. 92-A	1272	1222	Check	Prevent Backflow through Coil
U	1	Fig. 106-A	1270	1200	Globe	Control Meter Test Line

*Dependent on quantity of fixtures.

To assure efficiency when planning a major piping installation, consult with accredited piping engineers and contractors, and select valves from the Jenkins Catalog.

FREE enlargement of this layout No. 82 sent on request to Jenkins Bros., 100 Park Ave., New York 17.

JENKINS
LOOK FOR THE JENKINS DIAMOND
VALVES
JENKINS SINCE 1864
Jenkins Bros.
Sold through Leading Distributors Everywhere

Chevrolet's new El Camino combines fresh beauty with a husky pickup box that's 76¼" long, 64¼" wide.

THE BEST YET OF THE BEST SELLERS...

CHEVROLET TASK·FORCE 59 TRUCKS

This '59 Series 60 Chevy shoulders mammoth loads easily with parallel-design frame, high-capacity springs and load-boosting trailing axle!

For '59, the brightest new ideas in trucks are Chevrolet's! There's the new El Camino to set a new standard in styling . . . new features and refinements in every model to set new records for saving!

Here is the soundest, savingest, sharpest looking line of haulers that ever hustled a load! For evidence, consider the dazzling new El Camino. It combines slimlined beauty with the ability to handle man-size hauling jobs!

Or take the pickups of Task-Force 59—a *dozen* big-bodied beauties that suit scores of jobs with five handsome Fleetside models and seven handy Stepside models!

A new edition of the famous Thriftmaster 6, standard in light-duty models, gives up to 10% greater fuel economy—up to 20% with new maximum economy option*. And in the medium- and heavy-duty classes, you'll find new V8 power . . . axles, transmissions, frames and brakes that are refined and improved to whip the toughest runs.

Whether your truck is a light-, medium-, or heavy-duty job, these are trucks you've got to see! They're on display right now at your Chevy dealer's. . . . Chevrolet Division of General Motors, Detroit 2, Michigan.

**Optional at extra cost.*

NEW MIGHT, NEW MODELS, NEW MONEY-SAVING POWER! CHEVROLET

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new ways
to new Eye-Appeal

The challenge has been met. By using color more effectively, food processors are making their products more appetizing today than ever before.

Working within the letter and spirit of present Certified Food Color Regulations, we have helped many processors to step up the appetite appeal of new and existing lines. Right now our Technical Service Laboratories are better staffed and equipped than ever to give you prompt, practical help on re-matches or new formulations.

We make the broadest range of certified primary and secondary colors anywhere available, all precisely standardized for shade, pure-dye strength and composition.

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Boston Charlotte Chicago Philadelphia Portland, Ore. San Francisco Toronto

US RUBBER CONVEYOR BELTS

The clean, sparkling good looks of the U.S. Little Giant® Food Belt make it the ideal conveyor belt for inspecting meats. The food is sharply visible, imperfect items can be instantly spotted. The belt gives a big boost to employee morale and efficiency, too—makes a fine impression on visitors.

White is right—on sight.

The U.S. Little Giant Belt is easy to clean. It does not absorb foreign matter, hence never becomes rancid or moldy. Non-porous, odorless, non-contaminating.

There's a U.S. Little Giant conveyor belt for every branch of the food industry—in the right color for the highest working efficiency—for example, black, orange, green and white are stocked. Other colors available if required. We will recommend the right color for your belt's inspection line.

• • •

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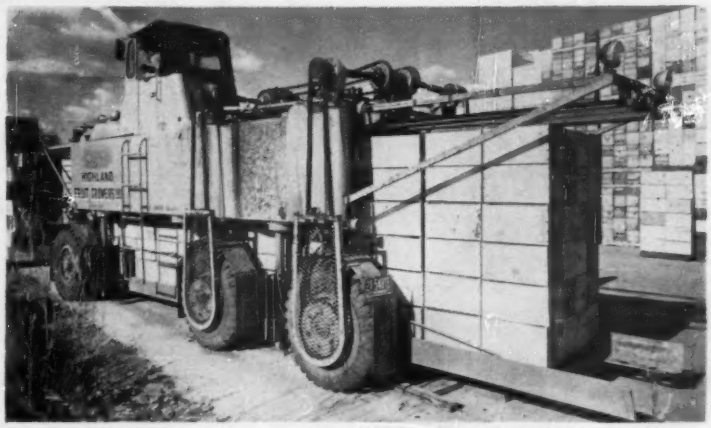
Packaged Water Heater Solves Boiler Problem

Recently, Arnold Baking Co., Port Chester, N. Y. was faced with a complex heating problem. They had grown from a small baker to an operation with $10,000,000 annual sales, all at the same plant locale with every square foot of space jammed with production equipment.

Plant is equipped with 3 boilers, totally inadequate to supply the demand of their increased operations, which included an atmosphere of steam in the rye bread ovens. But there was absolutely no space in the boiler room for generators.

We solved the problem by installing a compact, package, copper-tube indirect hot water generator. This uses No. 2 oil from existing fuel tanks. Object was to preheat boiler feed water from a minimum of 40 to approximately 220F. This removed the preheating load from the boilers and increased steam generating capacity almost 40%.

Flue connections were made directly to existing stack which, although also over-loaded, was supplied with induced draft to increase its capacity and eliminate expensive additional stacks.—*E. V. Beltran, Professional Engineer, Brooklyn, N. Y.*



Straddle Truck Speeds Apple Handling

Employment of a 6-wheeled straddle carrier to move boxed apples from orchards to the packing plant of Highland Fruit Growers, Inc., Yakima, Wash., has: (1) Eliminated 20 flat-bed trucks, and (2) cut overtime labor costs 75%.

Manufactured expressly for this purpose by Clark Equip. Co., the carrier goes directly to growers orchards and picks up 32-ft. long skids loaded with filled boxes. At the plant the driver pulls onto a concrete apron, drops the skid of boxes, picks up an empty one and returns to an orchard.

In the meantime, 3 fork trucks move boxes from the apron to cold storage. Previously it took 30 min. to unload a flat-bed truck. During this time many other trucks were backed up waiting. This caused congestion at the storage and delays at the orchards. Now the 3 fork trucks handle 50% more volume per shift due to lack of delays and less handling of pallets. Also, overtime is minimized.—*FE Staff.*

Handling Devices Make Racking Job Easier

Cheering up workers in the racking room by the new paint job at Miller Brewing Co. (FE, June '58), wasn't enough to satisfy the company. So the engineering department put on its thinking cap and initiated a modernization program designed to take most of the heavy labor out of the racking operation.

First step was to install a vibrating conveyor (Link-Belt) for moving empty barrels from wash house to racking room (left photo). Conveyor moves quarter, half and full barrels along a pair of guide rails by a constant rocking motion. Everytime an operator removes one, another falls into place.

Physical strain was taken out of the racking operations by attaching "upenders" (developed by Ruppert Brewing Co.) to filling machines (right photo). Previously, filled barrels were bunged in a horizontal position, then stacked on end.

With the upender, once a keg is "racked off", operator merely steps on a floor pedal. Keg is released and rolls down a short incline to the upender—a small, cradle-like, 4-roller bottomed platform balanced off-center. Weight of filled keg is sufficient to tilt counterweighted upender from horizontal to vertical. Then keg is transferred onto a roller-gravity conveyor.—*FE Staff.*

Atlas

ENGINEERED FLOORS END COSTLY MAINTENANCE

. . . provide lasting beauty!

Atlas Food Plant Floors combine lasting beauty and long service with a construction that permanently ends costly maintenance. Since these floors are completely corrosion-resistant thay are not attacked by any food acids or harsh cleaning agents. Patching is never required.

Individually engineered to your exact specifications, they are not affected by expansion, contraction nor thermal shock. In addition, Atlas floors retain their attractiveness even in the face of severe impact or continuous truck traffic.

Let Atlas show you how to permanently solve your food floor problems.

Write for your copy of Bulletin 3-2.

ATLAS MINERAL PRODUCTS COMPANY
MERTZTOWN, PENNSYLVANIA
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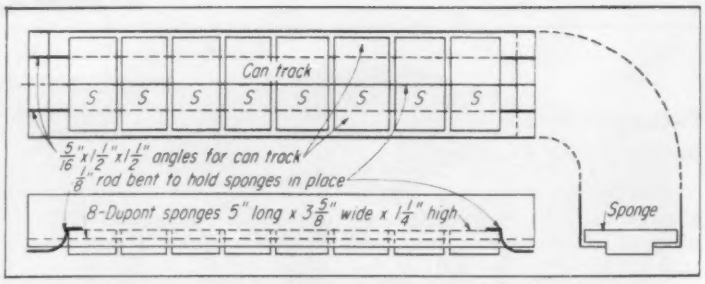
Practical Ideas



Sponge Wipers Cut Labeling Troubles

We had a problem in labeling quart cans following cooling due to excess water adhering to their surfaces.

Then we came up with a solution that further helped labeling by slowing down speed of cans in the track between cooler and labeler.

Two $\frac{3}{16}$x1$\frac{1}{2}$x1$\frac{1}{2}$ in. angles were installed above the can track, allowing a 2-in. space between their edges (top drawing). We then bought Du-Pont cellulose sponges 5x3$\frac{5}{8}$x1$\frac{1}{4}$ in. deep, and cut them to fit between the angles (right). Eight sponges were set in the rack and a $\frac{1}{8}$ in. rod about 35 in. long was placed over their centers. Ends of rod were bent so they could be fastened between the angles (below). This holds the sponges down.

A second, similar unit was installed in the track about 3 ft. from the first. Since their installation we have had no further trouble with wet cans. Water is squeezed from the sponges by hand about three times a day.—*M. E. Hill, Plant Superintendent, Food Producers, Inc., Minneapolis.*

Getting Most From V-Belts

Properly engineered V-belt drives provide one of the most efficient and economical means of power transmission in the food industry. But attention to various factors are necessary to prolong belt lives and assure continuous production.

One of the most common causes of excessive wear is improper sheave alignment. Things to look for here are: (1) Sheave grooves more highly polished on one side than on other; (2) belts worn more on one side than other, and (3) continuous squeaking or overheating of bearings. Alignment can be readily checked by placing a straight-edge or cord across the rim faces of the driver and driven sheaves.

Over-tension on belts causes excessive bearing pressures. A loose belt can result in slip burn, snub breaks, and ruptured cords in the grommet or plies.

Proper tension is not difficult to determine. Apply moderate pressure to belt midway between sheaves. A belt that can be depressed an amount equal to its own thickness for each 48-in. of unsupported length is considered properly tensioned.

Sheaves should be inspected regularly for burrs, rough spots, or excessive groove wear. Grooves kept free of dust or foreign matter will prevent side wall wear. Oil is another hazard to belt life. When exposure to it cannot be prevented, it's good economy to install oil-resisting belts.

Remove all tension from belts connected to machines which will be idle for extended periods. They retain their usefulness best if stored in a cool, clean, dry area, placed in bins, or hung over wall pegs. Sharp bends which could result in a permanent "set" are to be avoided. Tying matched sets of belts together will avoid mismatching.—*D. A. Locke, Supervisor, Sales, Texrope Drive Dept., Allis-Chalmers Mfg. Co., Milwaukee.*

Send FOOD ENGINEERING Your Ideas

We'll pay $5 to $15 (sometimes even more) for each contributed item used.

Just send us the facts about your idea and its application. And include a free-hand sketch or snapshot to show how it works.

We'll do the finished writing and drawing for you.

Send your idea today, before you forget. Address it to Practical Ideas Editor, FOOD ENGINEERING, 330 W. 42nd St., New York 36, N. Y.—The Editors.

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Change motors in minutes—

with FALK *all-steel* MOTOREDUCERS

No long and costly "down time" involved

Motors can be interchanged or replaced *in minutes* with the all-steel, All-Motor type FALK Motoreducer. No long and costly "down time" is involved in making the change!

Best of all, replacement is not limited to original make of motor—new NEMA frames may be substituted for old. This versatile Motoreducer operates with any make, speed or type of standard foot-mounted motor within its AGMA rating. No modification, no special shaft, no "partial" motor required.

In addition to unmatched motor interchangeability, this dependable gear drive—the "work horse of industry"—offers: widest choice of output-shaft position (horizontal, vertical, right-angle)...any output-shaft connection...any mounting, including wall and ceiling...standard speed range from 1.5 rpm to 1430 rpm. All these advantages, plus proved efficiency, low maintenance and extra-long life, make the All-Motor type FALK Motoreducer your best buy for any job requirement.

Furnished in sizes up to 75 hp with any make, style or type of motor; or, *without a motor if desired.* FALK Motoreducers are available from convenient factory, field or distributor stocks, from coast to coast.

Write for Bulletin 3100

THE FALK CORPORATION, MILWAUKEE, WISCONSIN

MANUFACTURERS OF:

- Motoreducers
- Speed Reducers
- Flexible Couplings
- Shaft Mounted Drives
- High Speed Drives
- Special Gear Drives
- Single Helical Gears
- Herringbone Gears
- Marine Drives
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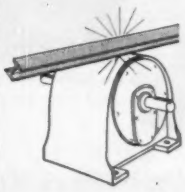
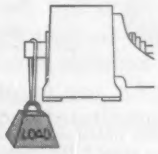
FALK

...a good name in industry

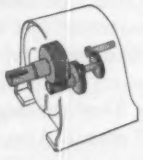
FALK "IN-BUILT" FACTORS assure full dependability—better service—longer life



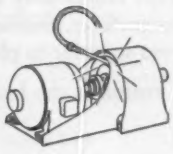
ALL-STEEL HOUSINGS
Rugged, strong, rigid ...all parts heavy steel plate, formed and welded in the Falk Weld Shop.



LARGE OVERHUNG LOAD CAPACITY
Large shafts, oversize bearings...rigid mountings with wide bearing spans to handle maximum loads.

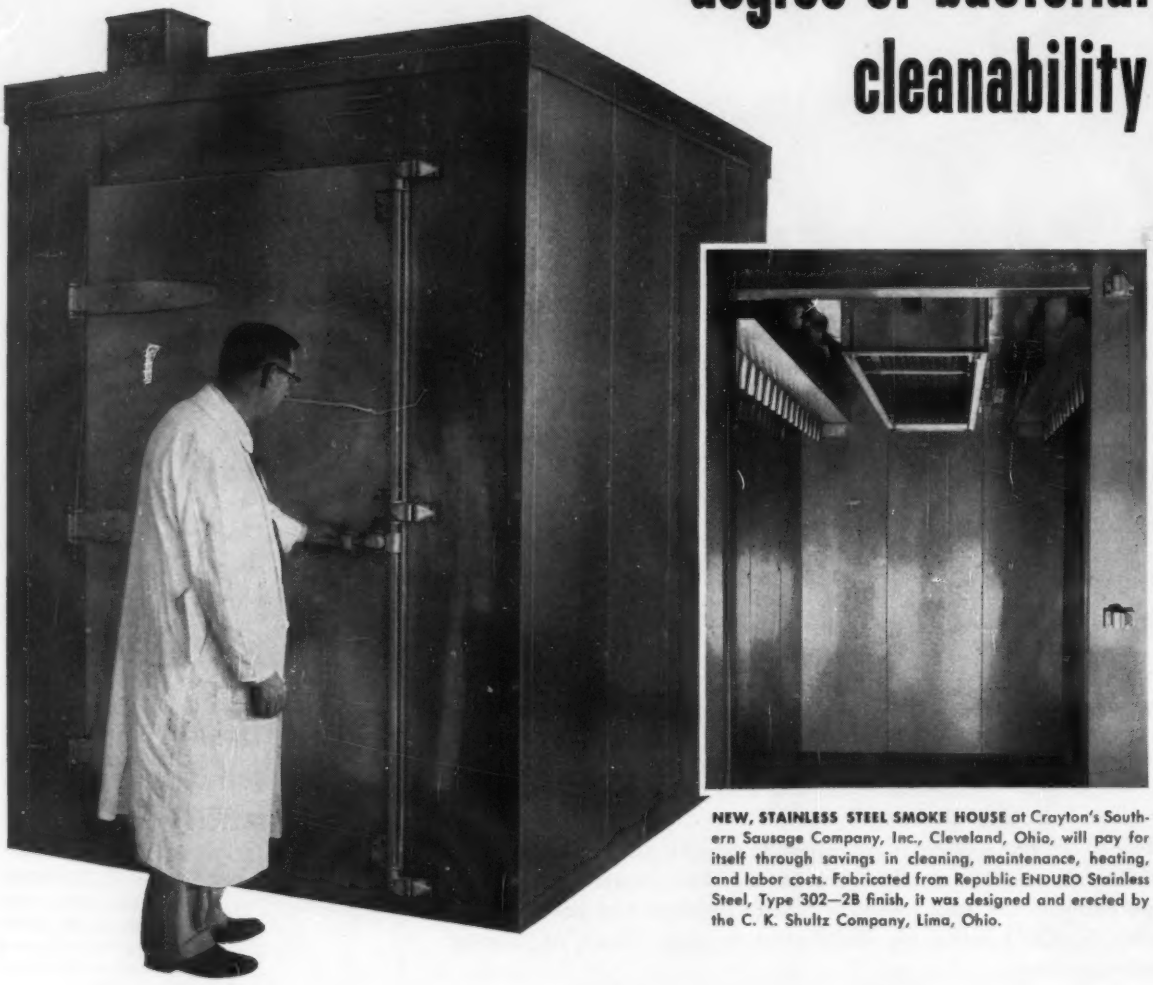


PRECISION GEARING
Heat-treated alloy steel gearing, precision cut and shaved after heat treatment to eliminate distortion.



SEALED HOUSINGS
Splashproof, dustproof, oiltight. Dual closures and one-way vents keep oil in, dust and moisture out.

REPUBLIC STAINLESS STEEL assures high degree of bacterial cleanability



NEW, STAINLESS STEEL SMOKE HOUSE at Crayton's Southern Sausage Company, Inc., Cleveland, Ohio, will pay for itself through savings in cleaning, maintenance, heating, and labor costs. Fabricated from Republic ENDURO Stainless Steel, Type 302—2B finish, it was designed and erected by the C. K. Shultz Company, Lima, Ohio.

STAINLESS STEEL SMOKE HOUSE HELPS LICK BACTERIAL INFESTATION PROBLEM. Meat packers, such as Crayton's Southern Sausage Company, Inc., have found in Republic ENDURO Stainless Steel the ideal material for use in processing stabilized, uniform, uncontaminated smoked meats.

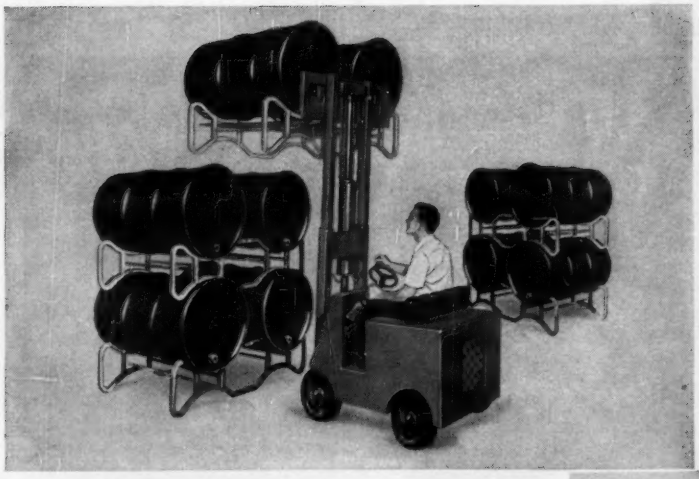
Why stainless steel? Because it offers a high degree of bacterial cleanability. In radioisotope tests, conducted at The University of Michigan on bacteria removal from worn or scratched surfaces, stainless steel proved to have the *highest cleanability,* over china, glass, and plastic. Also, worn stainless surfaces had the same *high cleanability* as new stainless surfaces. On unworn surfaces, stainless steel equaled china and glass, and was superior to plastic and aluminum.

Still another reason is the fact that stainless steel is noncontaminating. There is never any danger of metallic contamination. Stainless steel never adds unwanted flavor. Never takes anything away from the flavor you are striving to achieve.

Stainless steel in any food processing operation means less down time, less cleaning time, less maintenance, extended equipment life, lower costs.

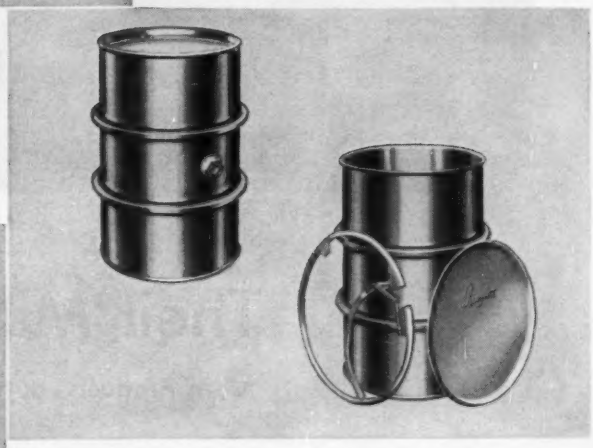
Safeguard the quality and purity of your products by using equipment fabricated from Republic ENDURO Stainless Steel. Your equipment-supplier has all the facts. Or send us the coupon for complete results of University of Michigan tests.

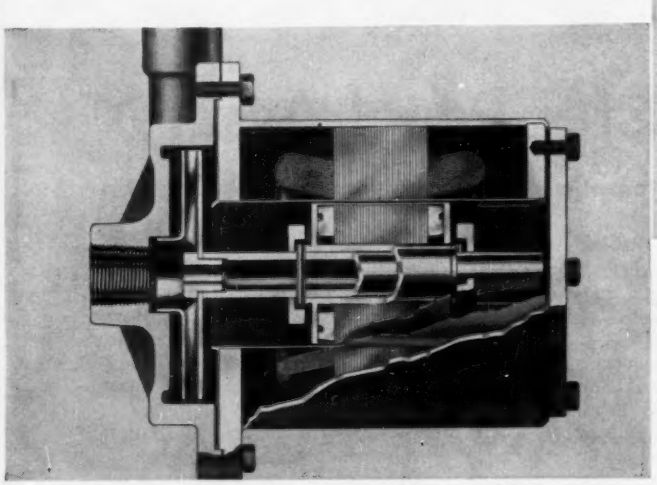
This example of the advantages of stainless steel is brought to you by Republic Steel in behalf of the stainless steel equipment manufacturers and the Republic Stainless Steel Distributors—your local steel service centers.



HERE'S ASSURANCE OF LOW-COST STACKING and handling of steel drums. It is Republic's new Portable Drum Rack. These steel cradles each support two loaded 55-gallon drums. Pairs of drums can be stacked to any practical height. More in-use drums can be accommodated in less space than ever before. Any standard fork-lift truck can pick up, move, and stack as many tiers of drums at one time as capacity permits. Shipped knocked down, with fasteners, for quick and easy assembly. Send coupon for complete details.

ASSURANCE OF MAXIMUM PROTECTION for your food products during storing or shipping is provided by Republic ENDURO Stainless Steel Drums and Barrels. They stubbornly resist corrosion. Never need painting. Withstand hard use and abuse. ENDURO Drums and Barrels are available in sizes up to 55-gallon. These are the ultimate in long-lasting, trouble-free, corrosion-resistant performance. Mail coupon for detailed literature.





TITANIUM ASSURES YEARS OF ADDED LIFE to processing equipment. Maximum corrosion-resistance plus an exceptionally high strength-to-weight ratio are major reasons for the use of Titanium in this seal-less, leak-proof, centrifugal pump made by Chempump Corporation, Philadelphia, Pennsylvania. Chempump's exclusive design makes it possible and economical to use Titanium for all wetted parts. Titanium is the ideal metal for processors using salt or brine. Titanium is impervious to the corrosive effect and pitting action of salt water and brine. Mail the coupon for more facts.

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World's Widest Range of Standard Steels and Steel Products

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☐ Send results of bacterial cleanability tests.
Send more information on:
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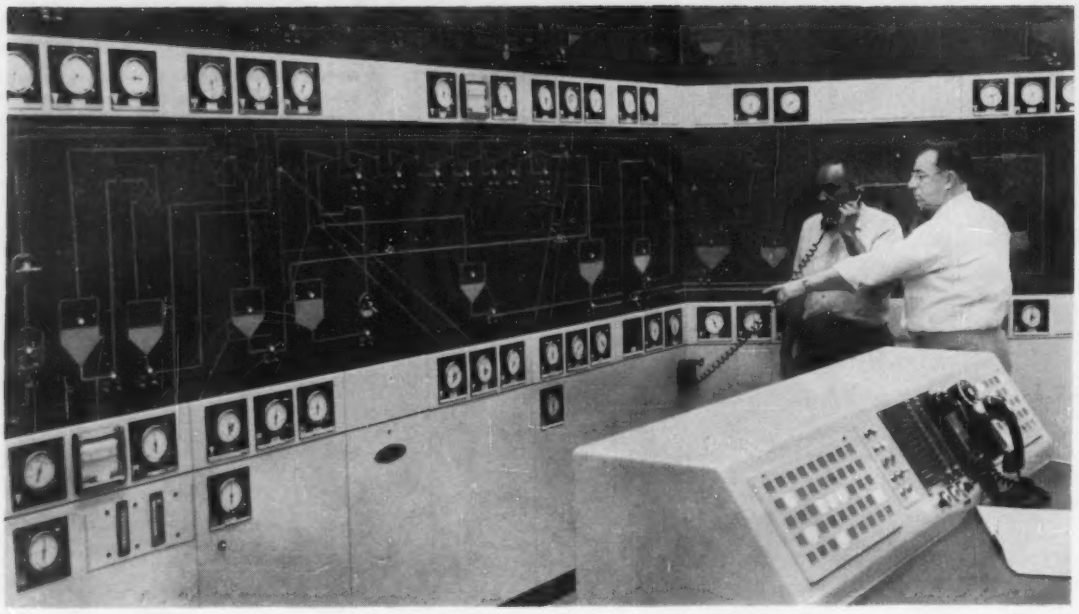


Their Master Panel Assures

Corn Products' automatic information system gives fingertip

OUR CONTROL CENTER, into which process data continually flows, gives us split-second quality control in high-speed continuous separation of starch and gluten.

Furthermore, this advanced instrumentation, at Corn Products Co., Argo, Ill., enables just five men to monitor the operation of over 200 pieces of process equipment.

Basically, converting 60 box cars of corn into 2,000 tons of starch and 30 cars of feed daily entails mechanical separation of solids in water suspension.

Fibrous materials are extracted by screening, then starch and gluten (the protein fraction) are separated in continuous centrifugals. Finally, water is removed from both starch and gluten in high-speed centrifugal concentrators. Noteworthy too is use of 1.5 million gal. of water per day for counter-current extraction of undesired soluble materials.

Early in the design stage, we foresaw the difficulty of stabilizing the many process variables inherent in putting 2,000 gpm. of starch slurry through continuous separators and concentrators.

Three extreme alternate solutions were available: (1) Dampen the process response (by blending in large tanks), thus giving operators the necessary time to make corrections; (2) assign enough operators to assure rapid correction of process deviations; or (3) provide instruments to sense these deviations, plus controls to stabilize them wherever possible.

In almost every case, some compromise must be accepted. Our comprehensive analysis indicated instrumentation as the most economical way of assuring consistently high-quality products, hence our new control center and system of coordinated field operations. Now for details of the setup and its action:

● **Unbiased Process Monitor**—An information system with off-normal audible alarms and data tabulator.

In operation, alarms signal and indicators flash (on special console) whenever measurements exceed preset values. The tabulator records about 150 bits of process data every hour and serves as a continual follow-up on operator activities.

● **Process-Picture Control Panel** contains two rows of control and indicating instruments with a blackboard above each for the graphic picture.

As shown in the lead illustration, the starch process is depicted on lower panel, flow advancing from left to right. Counter-current flow of wash water appears on top panel.

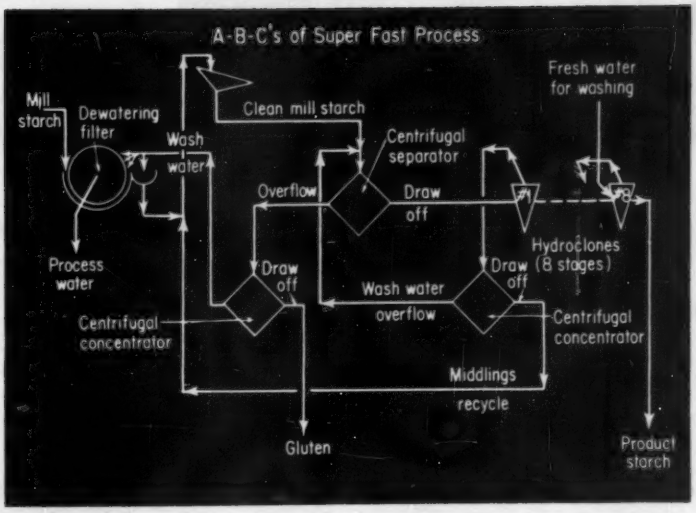
Panel instruments for gaging flows, temperatures, concentrations, and tank levels are visually linked to their corresponding processing points on the graphic representation by thin slanted lines. This greatly improves association of an instrument with a processing problem. About 75 measurements and 30 control settings are made at this panel.

● **Operations Console** has an annunciator system with 90 light-up nameplates separated into two groups.

One set requires immediate corrective action, while the other 'suggests' that the operator survey a portion of a process for adjustment. In addition, a telephone and paging

W. E. CARLSON

Engineer, Central Engineering Dept., Corn Products Co., Argo, Ill.



ALERTED by light-up console (lower right), supervisor indicates trouble spot on graphic panel. And process controller telephones data to production-line operators. Control is sped by new system's instrument-keyed panel, plus audible and visual alarms. Product flow in high-speed starch-gluten separation is depicted on lower blackboard panel, with counter-current path of wash water diagrammed on panel above. Some 250 different items of process information are continually evaluated at this control center.

AT 2,000-GPM. RATE, mill-starch slurry is put through centrifugals and concentrators for separation and dewatering of starch and gluten. Wash-water consumption is 1.5 million gal. per day.

Quick Action on Quality

control in continuous starch-gluten separation

system enable directing the activities of several production-line personnel. Latter make the required refinements and corrections.

In the control center, operator receives some 250 different items of information, including the tabulated data that must be assimilated and employed for process adjustments.

● **Quality Survey System** provides laboratory facilities for checking, among other variables, the quality of starch-gluten separation. This is accomplished by centrifuging samples of the process stream in calibrated test tubes (spin tubes), and measuring the volume ratio of starch to gluten. Taken hourly are two samples of discharge from centrifugals and 25 composites of the overall process.

● **Measurement and Control Systems** relieve men of the laborious task of monitoring and adjusting process variables. Thus, these men are available for more constructive duties. Instrumentation provides maximum integration of men and machines. Each component of the control network is dependent on and supplements the others.

Specifically, what does the control center accomplish?

It monitors process inventory (tank levels, about 24), flow rates (water and product slurries), dry substance (computed), variables (pressures, temperatures, etc.), and endpoints (concentrations).

Typical of the units operated in parallel are the Merco centrifugals. Supply of starch liquor and wash water is monitored by self-contained flow controllers, underflow density controls, and electrical energy required to operate machines. Excessive power consumption may indicate mechanical binding or other process conditions needing adjustment.

Advantages of the system? Consider these six:

1. **Product quality improved.** Control operator gets sufficient data in time to make early adjustments in this multi-step process.

2. **Yield stabilized.** Fingertip control enables uniform processing.

3. **Equipment cost cut.** Fewer centrifuges are needed, and holding tanks are smaller.

4. **Supervision simplified.** In pilot separation of starch and gluten, 33 recording charts were accumulated each day. A similar full-scale process would require about 150 charts a day, or some 50,000 a year.

Our data-tabulating system (Panalog 605, Panellit, Inc., Skokie, Ill.) gives the same information on a single chart per day. Operating in logical order, it sorts the process variables that have drifted and indicates them in red in a special segment of the log sheet. Such data processing and centralized pictured controls reduce the time required for process survey and planning.

5. **Housekeeping improved.** Spillage from tanks is minimized, and process can now be more rapidly shut down in event of mechanical failures.

6. **Greater flexibility assured.** Instruments in panel can be easily and rapidly altered in accordance with all process-design changes. Blackboard diagrams can easily be changed to represent process revisions. When flow lines are firmly established, a permanent graphic panelboard with raised symbols and aluminum stripping can be installed. —*End*

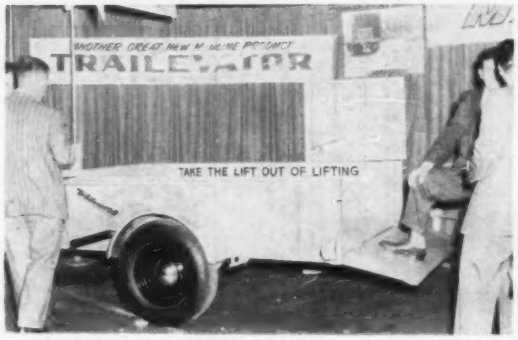
REFRIGERATED cargo unit (17 ft.) enables efficient transport by truck, rail, or ship. Its self-contained compressor holds pre-set temperature.—ACF Industries, New York. (33)

11 New Solutions

Latest trucking equipment, in-plant

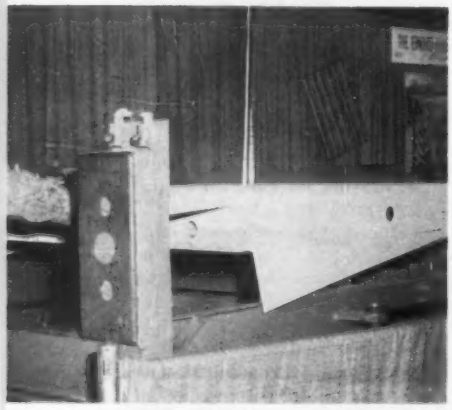
JOHN V. ZIEMBA
Associate Editor, Food Engineering

6 Advanced Trucking Units



HYDRAULIC elevating trailer quickly raises capacity loads from ground to hauling position, thus eliminates cranes, docks, and ramps. Split-hitch arm permits lowering trailer without uncoupling from towing vehicle.—Magline Inc., Pinconning, Mich. (34)

JUST PUSH BUTTON—and goods are mechanically loaded from ground or dock into truck or trailer. Powered floor-conveyor accessory does it. Floor segments engage chain to roll forward or backward in four floor-mounted channels.—H. S. Watson Co., Toledo, Ohio. (35)



AUTOMATIC, self-adjusting dock leveler raises for truck entry, then lowers to truck-bed level for loading or unloading. When truck leaves, unit returns to dock level without levers or motors.—T. & S. Equipment Co., Albion, Mich. (36)

TRASH LOADER replaces tailgate of any dump truck. Hydraulically operated unit consists of feed hopper housing a 12-in.-dia. inclined worm screw that crushes refuse being carried into truck.—Stratton Equipment Co., Cleveland. (37)

NYLON DOCK SHELTER seals top and sides of truck to curb refrigeration loss during loading. Cape retracts to building for safe clearance when not used. Spring tension holds frame and cover in place.—Frommelt Industries, Dubuque, Iowa. (38)

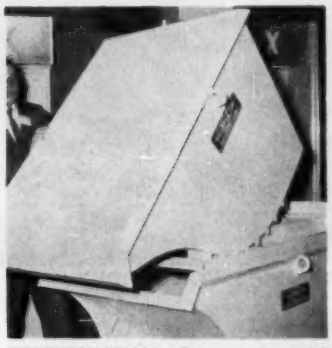
to Tough Handling Problems

'movers' seen at Handling Show. Engineers target problems

4 Efficient Handlers, Control Center

POWER DIVERTER transfers case goods in minimum space. It employs inclined rubber belt, live-roller section, vertical powered belt, and rubber-tired wheel. Diverting belt and wheel are at different angles for 45-, 90-, and 180-deg. turns.—The Belt Corp., Orient, Ohio. (39)

CYLINDRICAL wirebound pallet box, for free-flowing solids, is shipped flat, then easily assembled.—General Box Co., Des Plaines, Ill. (40)



SELF-DUMPING hopper is safely carried by industrial trucks, and dumped by tripping a latch. Empty units rights itself and locks in place.—Apex Welding & Fabricating Corp., Bedford, Ohio. (41)

COMPACT, integral conveyor-belt drive contains motor and moving parts in head-pulley drum. Thus, it eliminates conventional overhead V-belts and accessories.—Georg von Opel Corp., New York City. (42)

COMPARTMENT of aluminum-housed control center tilt out for on-job servicing. Baffling aids ventilation, and deionizing shield localizes faults.—Westinghouse Electric Corp., Buffalo, N. Y. (43)

Squeeze Gets Worse . . . Ways to Ease It

HOW TO CUT product-handling and distribution costs—now ranging 25-52% of selling price—was the dominant theme of Cleveland's Material Handling Conference.

"Lopsided engineering", by which gains in production are lost through inefficient handling, was sharply attacked by A. Harvey, Dasol Corp., New York City. Citing figures that show an alarming increase in non-productive man-hours, he called for broader application of assembly-line thinking for precise integration of all of a company's business functions.

Turning to high distribution costs, C. F. Venrick, ACF Industries, New York City, declared them inevitable so long as cargo must be handled 9-15 times from processor to consumer. To some extent, this inefficiency may be cut through use of railroad "piggyback" service. But what is still needed, he asserted, is standardization of door-to-door cargo units to eliminate costly repacking during changeover from truck to rail or ship transport.

Action to induce greater investments in capital goods was urged by A. M. Perrin, National Conveyors Co., Inc., Fairview, N. J. He called for quicker amortization rates for tax purposes and speedy lowering of prices. A good start toward cost reduction could be made if design engineers were to re-evaluate their products with a view to eliminating frills that boost price but add nothing to function.

Circle key number on Reader-Service Card, back of book.

Using Salt Efficiently

by INTERNATIONAL SALT COMPANY, INC.

Hydraulic Handling—Quick, Economical Way to Move Salt into Storage

Here's a new, effective method for moving salt from delivery cars or trucks into plant storage, without disrupting other operations. Hydraulic Handling systems, already in operation in several plants, have eliminated the expense of mechanical unloading equipment, and cut down considerably on man-hours needed to do the job.

What is Hydraulic Handling? Very simply, Hydraulic Handling is the movement of granular salt in circulating saturated brine, through pipes. Referring to the diagram, you will note that dry salt from the hopper car is mixed with saturated brine in a salt-receiving pit, to form a slurry of the saturated brine and undissolved salt. This slurry is pumped through a pipe to a salt-storage tank. Overflow brine from the tank continuously returns to the slurrying pit to carry more salt into storage.

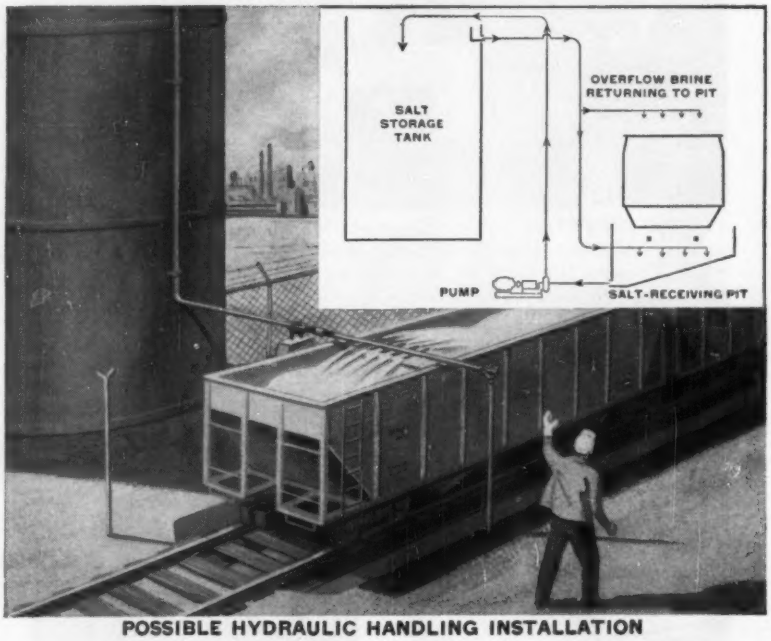
Advantages of Hydraulic Handling. Every Hydraulic Handling installation has a number of exclusive advantages:

1. **Great flexibility.** Because *pipes* do the work of carrying salt, a Hydraulic Handling system can be installed anywhere in the plant. Piping is flexible, and can be run where it won't interfere with other plant operating activities.

2. **No need to move existing equipment.** Machines that might obstruct mechanical handling equipment simply don't get in the way of a Hydraulic Handling installation.

3. **Long life, low maintenance.** You need no safety guards . . . no roofing to protect salt from weather . . . no belt conveyors, elevators or similar pieces of mechanical handling equipment. Also, there is never any salt dust that might corrode vital plant equipment. As a result, Hydraulic Handling installations have a long life, with very little maintenance expense.

4. **Unlimited capacity.** Hydraulic Handling systems can be designed to unload, move and store any amount and type of salt—rock or evaporated. Whatever your specific unloading needs, Hydraulic Handling can satisfy them.



POSSIBLE HYDRAULIC HANDLING INSTALLATION

For rock-salt users, Hydraulic Handling is especially economical when used with combined wet-storage and dissolving tanks or with International Salt Company's famous Sterling Wet-Storage Lixator. These units store Sterling Rock Salt the same way Hydraulic Handling moves it: combined with saturated brine. Thus the salt-and-brine slurry delivered through Hydraulic Handling to the Lixator *is already in the correct form.* The Lixator delivers 100%-saturated Lixate Brine through pipes to any point of use in the plant, and automatically makes more brine as needed.

From delivery to use, dry rock salt is never handled in plants equipped with both a Hydraulic Handling system and a Sterling Lixator.

You can get more information on how Hydraulic Handling can work in your plant to cut down salt-unloading and salt-handling expense from International Salt Company. One of our experienced Sales Engineers will be glad to work with you to determine the best system of Hydraulic Handling for your specific needs. He can also help you use salt efficiently in *all* your plant operations needing salt or brine.

Behind this qualified salt specialist are all the resources and experience of International Salt Company. We produce both Sterling Rock Salt and Sterling Evaporated Salt in all types and sizes . . . plus automatic equipment for making brine from both kinds of salt. So our sales engineer can recommend the type and size of salt most perfectly suited to your needs. He can also recommend the most efficient and inexpensive methods for storing, handling or using salt or brine. Ask him . . . send a card or letter to International Salt Company, Inc., Scranton 2, Pa. . . . or contact our nearest sales office.

INTERNATIONAL SALT CO., SCRANTON, PA.

Sales Offices: Atlanta, Ga.; Chicago, Ill.; New Orleans, La.; Baltimore, Md.; Boston, Mass.; Detroit, Mich.; St. Louis, Mo.; Newark, N. J.; Buffalo, N. Y.; New York, N. Y.; Cincinnati, O.; Cleveland, O.; Philadelphia, Pa.; Pittsburgh, Pa.; Memphis, Tenn; and Richmond, Va.

Service and Research are the Extras in **STERLING SALT**

PRODUCT OF INTERNATIONAL SALT COMPANY, INC.

Ends Concrete-Floor Pitting

Special non-skid epoxy topping withstands daily exposure to concentrated fruit acids, syrups, cleansers, and heavy traffic in preserve plant

STILL MIRROR-SMOOTH after six months in preserve-cooking area, tough resin-surfaced concrete contrasts sharply with old heavily corroded floor section (arrow).

GNAWING EROSION of fruit acids and sugar concentrates had, in less than a year, seriously deteriorated the supposedly resistant concrete floor of our preserve-cooking area at ADS Food Products, Inc., San Jose, Calif.

This created an unsightly and potentially unsanitary condition. Further, the rough, pitted surfaces were difficult to clean. And accelerating the breakdown were steam and detergents used to flush the floor.

After several unsuccessful attempts at a remedy, we consulted Hodges Chemicals Co., Redwood City, Calif. Recommended was a special skid-proof epoxy-base topping called Hypon. Two test patches (12 x 18 in.) were applied in the affected area and adjacent to a nearby work table from which 50% citric-acid solutions are dispensed.

Three months of daily exposure to fruit acids had no effect on these patches but, significantly, concrete around the edges had eroded another ⅛ in. As a result, resurfacing began.

The epoxy topping is a completely non-volatile material based on Epon resins (Shell Chemical Corp., New York City). Afforded by these resins are considerably greater tensile and compressive strength than concrete, also exceptional adhesive qualities.

A. DE FRANCO
President, ADS Food Products, Inc., San Jose, Calif.

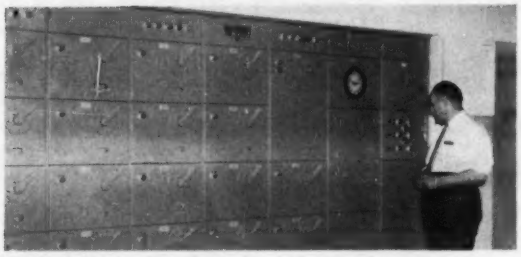
Topping Easily Applied

Floor repair began with thorough steam cleaning of eroded surfaces to free them of acid contaminants, fruit particles, oil, grease, and dirt. Then the floor was dried.

Next, a film of epoxy adhesive (HCC-89) was spread over the area (where cavities had reached ¼-1 in. depths). Then a sand-cement mortar was applied as a filler and leveled to restore the floor to its original plane. When the cement had set, epoxy-base mortar was troweled on to a ⅛-¼ in. depth.

This mortar sets to a hard, durable surface that not only resists attack by most acids and alkalis but also stands up under heavy lift-truck traffic. Inclusion of fine abrasive aggregate (such as sand, carborundum, or aluminum oxide) provides the non-slip feature, which is particularly important when personnel must work on wet floors.

To date, there's been no noticeable scarring, pitting, or erosion, even though the topping has been exposed daily. —End



TROUBLE-FREE performance of three bakery ovens is achieved by centralizing motor controls in this panel, remote from hot areas. Note neat recessing into wall.

Centralized Controls *Pre-Solve* Problems

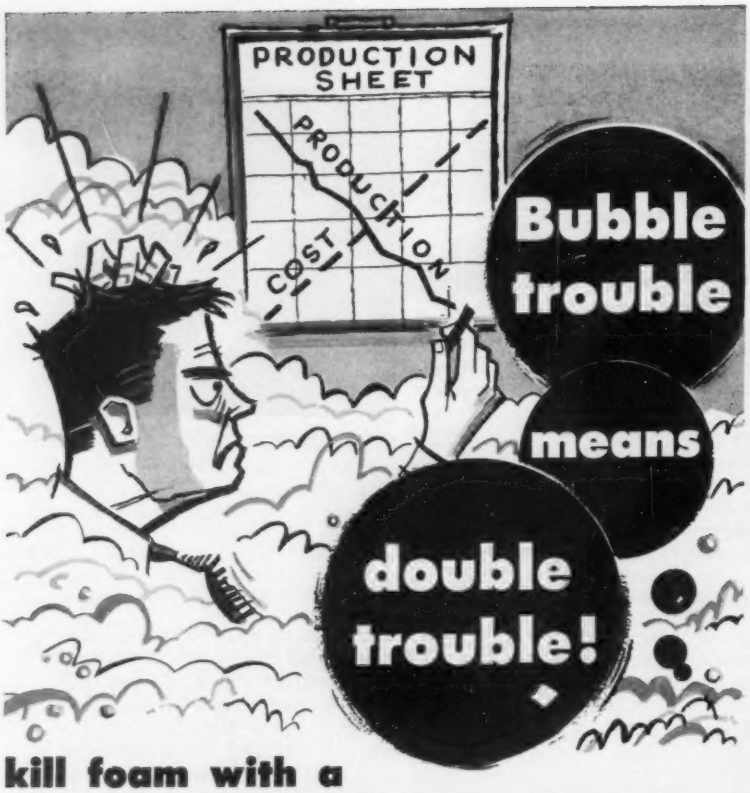
How remote-panel setup licks baker's motor and electrical failures "before they can happen." Dividends: Simpler wiring, speedier servicing, new flexibility. System also totalizes output

DOES IT MAKE economic sense to centralize production-equipment motor controls? Specifically, are costs of such a remote-panel installation, including under-floor conduits, justified?

We at National Baking Co. say "Yes"—and cite our special oven-control setup as proof. After 14 months of central-panel operation of our three gas-fired Peterson ovens, we've had no motor-starter or electrical failures. We haven't even had to change a fuse!

Being geared to oven capacity, baking production really suffers when equipment breaks down due to motor or electrical failure. This fact drew our special attention when we were constructing our new $2¼ million bakery. So we sharply pre-evaluated the breakdown factors—and didn't "green-light" the project until we were satisfied that we had

MINOS ASPROYERAKAS
Vice-President & Chief Engineer, National Baking Co., Chicago, Ill. (with acknowledgement to R. E. Hauptly, Cutler-Hammer, Inc., for his aid with article)



kill foam with a Dow Corning SILICONE DEFOAMER

Is foam giving you the old "one-two"? One—slowing up your processing . . . two—running up your costs? Fight back hard. Knock out foam fast, with Dow Corning silicone defoamers . . . most efficient foam killers known!

1 oz kills foam in:

208,333 lb lobster tank brine

41,666 lb soft drink syrup

20,800 lb deep fry fats and oils

FREE SAMPLE! Make your own test. Return coupon below for generous *trial sample* of a Dow Corning SILICONE DEFOAMER. No obligation, of course.

first in silicones

Dow Corning CORPORATION
MIDLAND MICHIGAN

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NAME

TITLE

COMPANY

CITY ZONE STATE

My foamer is

Oil system

Aqueous system

Other

shaped a system and layout that afforded maximum protection.

In weighing the liabilities, our focus centered on the practice of mounting controls directly above ovens. We found that heat from the baking units tended to play havoc with the control systems. The heat would build up in the exposed housings, which are constructed air-tight to avert entrance of dust.

It was indicated, too, that locating fuses here can have a lot to do with their frequent burning out. High oven and motor-current heat will blow them.

A maintenance man will then, more than likely, 'overfuse' the line—use fuses of too-high amperage. But this lowers the electric-wire protection, and so there's risk of the motor burning out.

True, oven motors have overload controls. Thus, when a motor is overloaded, the magnetic starter and thermal overload coil (corresponding with amperage rating of a motor) automatically go into "off" position (break the circuit).

But oven heat may trip the coil too soon—unnecessarily stopping the motor far short of overload.

Maintenance step here is to install a thermal coil rated, amperage-wise, higher than the motor. But this isn't good—because then the motor loses its overload protection.

Puts Them Out of Range

Our solution, curbing tedious trouble-shooting and production-killing downtime, was remote installation of a Unitrol centralized control system (Cutler-Hammer).

The Unitrol has a simple mounting-frame into which are bolted all the oven-control devices. At our control center, units are housed and supported in a steel enclosure.

Here are "dividends"—

. . . **Easier accessibility to instruments,** since units are now centralized, rather than scattered inconveniently above different ovens.

. . . **No risk of damage to controls** while servicing ovens.

. . . **Simplifications in wiring** due to change from the separate to the centralized.

. . . **New flexibility,** since setup of control units readily can be rearranged to meet new needs.

. . . **Centralizing of production checks,** for system enabled a panel hookup of eight totalizers to sum up the counts of various types of bread coming from slicer-wrapping machines. —*End*

B.F.Goodrich

Photo courtesy BrookzFoods, Inc., Collinsville, Illinois

Green belt improves inspection, reduces eye strain, cleans easily

B.F.Goodrich belt cuts maintenance costs, lasts longer too

Problem: Those women inspect some 10,000 pounds of mushrooms a day. At first, a white conveyor belt was used on this line. But it soon turned a muddy brown color. Inspectors strained their eyes looking for bad spots on the mushrooms. The belt was difficult to clean.

What was done: Then a B.F.Goodrich distributor recommended an improved conveyor belt, developed by B.F. Goodrich for handling many kinds of food. The Highseal belt is light green in color, a shade selected by color experts as being easiest on the eyes for inspection service. A special rubber compound gives this belt good resistance to moisture, food acids, most greases, fats and alkalies. It can take temperatures down to zero, up to 212 degrees.

Savings: After three years, the Highseal belt has outlasted the previous belt, and still looks good. The chief engineer of the plant reports that maintenance is no longer a problem. From the standpoint of cleanliness, the belt has exceeded expectations in every way. Employees who work over the green belt eight hours a day find their job easier, more pleasant.

Extra benefits: Since food can't grind into its smooth, polished surface, this belt can be wiped clean with a damp cloth—no scrubbing or scouring needed. Since it is odorless, tasteless, non-toxic, there's no danger of the belt contaminating food.

Where to buy: Your B.F.Goodrich distributor has full information on this belt and can tell you about its many other advantages for food-handling operations. *B.F.Goodrich Industrial Products Company, Dept. M-477, Akron 18, Ohio.*

B.F.Goodrich *conveyor belts*

Now protect product purity, hold down costs two ways with these U. S. Steel rust-inhibited drums

U. S. Steel rust-inhibited drums give maximum protection because they are made with extra care. Every head, shell and bottom is precisely formed, chemically cleaned, then coated inside and out with zinc phosphate – all before final forming.

And to each of these rugged, durable drums–and pails, too–U. S. Steel tacks on two extra purchasing advantages:

1. Today's widest variety of carbon steel shipping containers is offered by U. S. Steel. Capacities from 2½ through 57 gallons, plus a full line of stainless-steel pails and drums.

Special linings and closures are supplied to your specification. Unsurpassed color-decorating facilities are available–all to assure you of a container best suited to your needs.

2. Seven U. S. Steel container factories, located in key areas, form a nationwide network. You can take deliveries by rail or truck, set up arrivals to coincide with your production schedule. You minimize handling and inventory problems, get on-time deliveries.

We urge you to talk over your requirements with your U. S. Steel representative. He puts at your disposal over 40 years' experience with all types of shipping-container problems.

Factories in: Los Angeles, Calif. · Alameda, Calif. · Port Arthur, Texas · Chicago, Ill. · New Orleans, La. · Sharon, Pa. · Camden, N. J.

HOW U. S. STEEL GIVES "LOCAL" SERVICE. U. S. Steel has spotted its container plants in seven key areas to give you better service. In addition, there are sales offices in many other cities. Wherever you are, there is a convenient USS representative or factory ready to serve you.

United States Steel Products Division

USS TRADEMARK

For more data, circle 294 on Reader Service Card

BHC Retention is High In Wheat and Cheese

Retention of the gamma isomer of benzene hexachloride by wheat and cheese has been studies by using C^{14} labeling of the insecticide which was sprayed onto wheat to give residues of 1.1-18.2 ppm. Cheddar and Stilton cheeses had marked areas painted with an acetone solution of the labeled insecticide. Dosages varied from 0.5-1.0 oz. per sq. yd.

Up to 50% of the residual insecticide was found in fine flour, while concentration in bran was 2-4 times that in the whole wheat. Up to 30 or 40% of the residue in milled wheat is retained in baked doughs.

Part of the BHC is converted into chlorinated benzenes, 1, 2, 4-trichlorobenzene predominating. It seems unlikely that these are more toxic than gammabenzene hexachloride, and, at the concentrations found in bread, present little toxic hazard to consumers.

In cheese the insecticide remains in the outer 1 cm. layer. Loss is very slow—40% of initial dose remained after 44 weeks of storage. It does not appear to change chemically while retained by the cheese and is not affected by cooking.—*J. Sc. Food & Agr.*, 9(7), 431-48, 1958.

Improved Disinfectant

Beta-propiolactone ($C_3H_4O_2$) as a gaseous disinfectant is 25 times more active than formaldehyde, 4,000 times more than ethylene oxide, 50,000 times more than methyl bromide. However, it is less penetrating than ethylene oxide, and requires high humidity for activity.

Beta-propiolactone is a ring compound derived from propionic acid. It is a colorless liquid boiling at 311F., has a slightly sweetish odor, and is lachrymatory even at low concentrations.

In one 50,000 cu. ft. building contaminated with *B. Subtilis* var. *niger* spores, 16 liters were disseminated with Todd Fog Applicators, first raising temperature to 75F. and relative humidity to 80%. After a 2-hr. exposure, no viable spores were recovered from 55 samples.—*Applied Microbiology* 6(5), 358-62, 1958.

Beer Fermentation Goes Continuous

Continuous fermentation of beer (top-fermented) has been achieved on a laboratory scale, using a single fermenter, or up to 3 inter-connecting vessels.

First fermenter was charged with 1.1 liters of wort (7.5-13.2 deg. Plato) and lg. yeast. When attenuation of wort reached 25, 50, or 75%, depending on whether 3, 2, or 1 fermenters were used, addition of fresh wort and removal of fermented beer were started.

Wort was fed to fermentation at 2.6 l/day by means of a reciprocating pump. Fermented beer was withdrawn through a cooler at same rate from last vessel. It was fined, stored, filtered and bottled in the usual manner.

Two fermenters were more efficient than one, but a 3rd didn't increase efficiency measurably. Temperatures up to 85F. increased efficiency but decreased yeast crop. Beer composition was essentially the same as that made by the conventional fermentation process. At 60F. beer was produced 2½ times as fast as by batch method and, at 85F. 6 times as fast.

Fermentations infested with *Aerobacter* or *Acetobacter* bacteria continued to operate efficiently, and number of bacteria didn't increase beyond 3,000 per million yeast cells. Vitality of yeast was not impaired by long periods of fermentation.—*J. Institute of Brewing* 64(5), 404-10, Sept.-Oct., 1958.

New OG Formula Suggested For Top-Fermented Beers

Recent studies on both bottom- and top-fermented beers suggest that Balling's formula, may need revision, especially for top-fermented beers.

Careful tests during 15 fermentations indicate that, for each g. of alcohol produced, 0.056 g. of yeast is formed in a bottom fermentation and 0.094 g. in a top one—Balling assumed 0.11 g. in his formula developed in 1865.

Evaporation of alcohol during fermentation and cellar operations is also appreciable—11.4% for bottom fermentations up to racking, 19.7% for top-yeast brews.

As a result of the studies it is recommended that Balling's old formula: Original Gravity

$$= \frac{(2.0665 \times \text{wt. alcohol} + \text{real ext.})100}{(1.0665 \times \text{wt. alcohol} + 100)}$$

be retained for bottom-fermented beers, and that a new formula: Original Gravity

$$= \frac{(2.1457 \times \text{wt. alcohol} + \text{real ext.})100}{(1.457 \times \text{wt. alcohol} + 100)}$$

be used for top-fermented beers at the racking stage.—*Brauwissenschaft* 10(12), 298-311, (1957). (German, with long English summary).

H_2O_2-Catalase Method Makes Better Cheese

Swiss and cheddar cheeses of excellent quality and uniformity have been produced from raw milk treated with H_2O_2 and catalase.

Benefits derived from the method are attributed to: (1) Selective action of H_2O_2 on bacteria in which organisms causing common defects in cheese are largely destroyed while many of the beneficial ones survive; (2) activity of natural enzymes which are inactivated by pasteurization (and possibly the added catalase), and (3) effect of peroxide on milk proteins, resulting in cheese with medium-firm, elastic body.

Principal disadvantages of the process are: (1) Increased time required to inactivate the peroxide, and (2) added cost of H_2O_2 and catalase (0.1-0.5c./lb.).—*J. Dairy Science*, 1460-65, Oct. 1958.

Simple Color Test Indicates Dairy Product Spoilage

Neotetrazolium dye offers a simple color test for incipient decomposition of refrigerated dairy products well in advance of organoleptic spoilage.

The test was applied to bottled

a new foam plastic insulation of outstanding properties

Uni-Crest is an extremely lightweight homogeneous white material with a smooth, tough surface. It is composed of minute, individually closed cells, produced by expanding beads of polystyrene. The inherent properties of Uni-Crest make it an excellent low temperature insulating material.

Uni-Crest has a low K factor (thermal conductivity) and retains its insulating value indefinitely. Lightweight, strong, flexible, it has excellent bonding characteristics, is non-dusting and non-flaking, and can be cut and handled easily. Uni-Crest is inexpensive, too.

Write today for complete specifications and installation information on application of Uni-Crest to your specific problems. We will be happy to send you this, plus an actual sample of Uni-Crest.

UNI-CREST DIVISION UNITED CORK COMPANIES
Since 1907

UNITED'S UNI-CREST EXPANDED POLYSTYRENE

2 Central Avenue, Kearny, New Jersey

BRANCH OFFICES OR APPROVED DISTRIBUTORS IN ALL KEY CITIES

and bulk cream, concentrated skim milk, creamed cottage cheese and cottage cheese curd. It proved applicable to cream and skim milk, but was found to have only limited value with cottage cheese products due to their tendency to undergo surface spoilage not detected by the test.

Incipient decomposition in coffee cream was detected an average of 4.7 days before flavor spoilage. With whipping cream the interval was 6.5 days, bulk-refrigerated heavy cream, 8.5 days, concentrated skim milk, 7.8 days. Superheated concentrated milk showed no better keeping quality than unsuperheated.—*J. Milk & Food Tech.*, 223-25, Aug. 1958.

Chi Square Method Pinpoints Efficiency of Dry Mixing

The problem of mixing dry ingredients uniformly has been studied by use of a Bureau of Mines mixing wheel.

In this device a number of cylindrical containers are attached radially to periphery of a wheel which is turned for a predetermined number of revolutions. Red, white, and blue roofing granules in fixed ratios, 10 parts of each for example, were added to the tubes which were then turned the desired number of revolutions. Samples were then taken, and the number of each color in the first 30 granules were counted.

Chi-square for each sample was calculated and plotted against number of revolutions. A random state was approached very quickly, and chi-square values reached a minimum 10-20 revolutions. For the device used, the mixing process was initially a very rapid second order mechanism, followed by a slower first order process.—*Ind. & Eng. Chem.* 50(9), 1279-82, 1958.

Water-Soluble Chocolate

So-called "precursors" of chocolate flavor and aroma are water-soluble and can be extracted in aqueous solution from fermented unroasted cacao beans.

This is first step in a patented process for producing a powder having full-bodied chocolate flavor and aroma.

Subsequent steps include evaporation of solution to dryness and roasting powdered extract.

As an example, 96 lb. of broken,

IS Flavor Control YOUR PROBLEM?

Mono Sodium Glutamate, when used in the proper quantity, is the key to over-all control of the flavor variables involved in food processing.

Catching up with your competition, maintaining your position in today's competitive market, or leading the field, may depend on your decision to use MSG.

MSG blends, strengthens and preserves the natural fresh flavors of your product. It creates a uniformity of taste, a flavor identity which is the first step in establishing lasting consumer brand preference.

Great Western's MSG is available in bulk 100 lb. and 25 lb. drums.

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GREAT WESTERN

MSG

99+% Pure Mono Sodium Glutamate Crystals

THE GREAT WESTERN SUGAR COMPANY

Denver, Colorado

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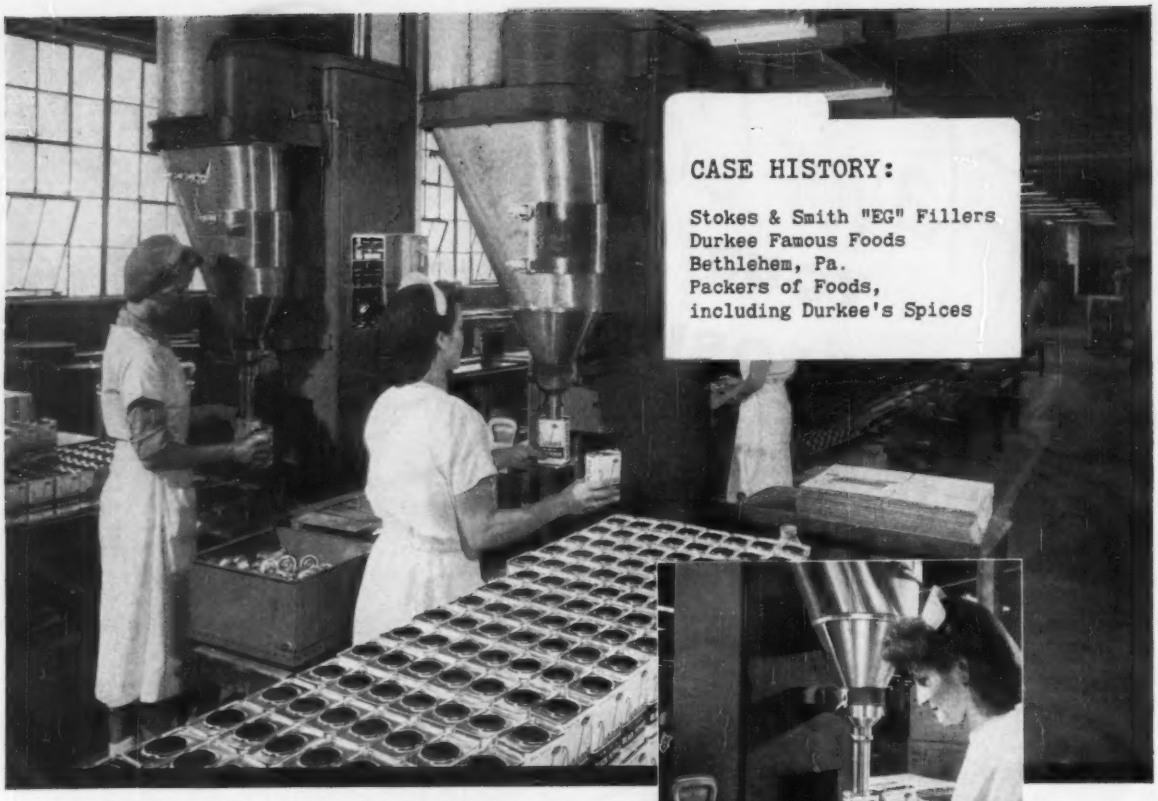
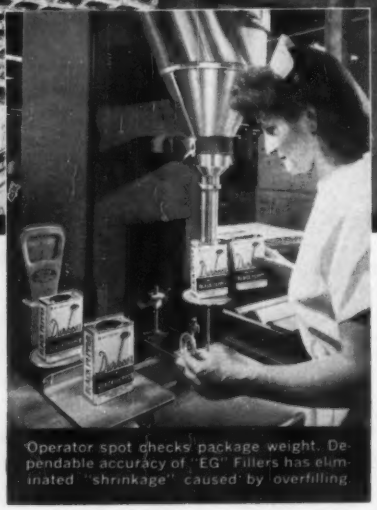
Advances in Technology

Keep Your Product on the Move





Operator spot checks package weight. Dependable accuracy of "EG" Fillers has eliminated "shrinkage" caused by overfilling.

"EG" Fillers nearly double production while slashing "shrinkage."

"Since we replaced our filling equipment with Stokes & Smith "EG" Fillers, we've almost doubled production with no increase in the number of machines," reports Durkee Famous Foods, Division of Glidden Company. "At the same time, 'shrinkage' has been substantially reduced because filling is accurate."

"Besides saving us money, the machines have made it possible for us to increase our range of containers. Without complicated changeover, we now fill eight ounce cans, 16 ounce cans and glass, five pound cans and six pound sizes in cans and cartons."

In addition to handling a wide variety of container types, the "EG" Filler offers four filling methods to meet specific requirements – cam controlled auger, pressure packing, gross weight or combination auger-vacuum. Extreme flexibility and quick changeover make this unit ideal for short runs and off-size containers.

FOR COMPLETE INFORMATION, ASK FOR BULLETIN P-802-R.

Putting Ideas to Work

FOOD MACHINERY AND CHEMICAL CORPORATION
FMC Packaging Machinery Division
Stokes & Smith Plant
4914 SUMMERDALE AVENUE, PHILADELPHIA 24, PA.

For more data, circle 297 on Reader Service Card

cleaned cacao beans are placed in a vertical stainless steel pipe, with a water inlet at bottom and outlet at top. Water at about 300F. is admitted at rate of 0.085 gpm., and a total of 6 runs are made.

Extract containing 7.6% solids, is concentrated at 125F. and 25 in. vacuum to 30% solids. It is then spray-dried, yielding 15 lb. of powder that is mixed with 135 lb. sugar to make a base for an excellent flavored chocolate milk beverage.—U.S. Patent 2,835,585, May 20, 1958.

Storing Cocoa Beans

Cacao beans of some varieties such as Java or Ceylon are easily broken by pressure or friction when running into and out of silos.

To prevent damage when filling, silo should have baffled cascade columns, spirals, or zigzag slides.

A central emptying column or tube, with controllable gates, allows removal from the top downward, and thus avoids damage from friction and high pressure.

Critical moisture content of beans is 8%, corresponding to 70-80% relative humidity in the air. Above this point mold growth may occur. Aeration is difficult unless the silo is provided with ducts that permit ventilation horizontally in layers instead of throughout the full depth of the bin.

Cacao silos may be quite large—those at the Hershey plant are 33 ft. in dia. 115 ft. deep; at Walter Baker they are 24.5 ft. in dia. 95 ft. deep. Silos 20-30m. high (65-98 ft.) and 3-4m. (10-13 ft.) square, holding 100-200 tons of beans are recommended for smaller plants.—*Int. Choc. Review*, 12(3), 110-26, 150-67, 1958.

Short Courses: U. of Ill.—Quality Control by Statistical Methods, Jan. 26-Feb. 5; U. of Md.—Ice Cream, Jan. 19-28; Michigan State—Quality Control & Analysis, Jan. 12-23, Milk & Related Products, Jan. 26-Feb. 6, Cottage Cheese & Cultures, Feb. 9-20, Ice Cream, Feb. 23-Mar. 6, National Dairy Eng. Conf. Feb. 26-27, Dairy Plant Supervision, Mar. 9-20; Penn State—Testing Dairy Prod., Jan. 5-10, Ice Cream, Jan. 12-24; Market Milk, Jan. 26-Feb. 7, Bulk Milk Tank Weighers & Samplers, Apr. 27-May 1; Rob't A. Taft Sanitary Eng. Center, Cincinnati, Microbiological & Chemical Examination of Milk & Dairy Prod., Feb. 2-6.

Keep Your Product on the Move

Ashworth Omniflex Belt carries frozen asparagus . . . rapidly . . . economically

with ASHWORTH METAL PROCESS BELTS

Whether it is baking, deep frying, quick freezing, cooling or any other process operation, you can keep your product on the move better with a belt designed to the specific job.

Fabricated from any metal capable of being formed into wire, Ashworth Belts provide a conveying medium permitting processing in transit through temperatures from −50° to 2100° F. Wherever your product must go during processing, be sure to get the "right" belt for the job . . . consult an Ashworth engineer.

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SUPER-DRY REFRIGERANTS

In "Genetron" Super-Dry Refrigerants, moisture has been reduced almost to the vanishing point. "Genetron" 12, for example, has less than one-thousandth of one per cent of moisture! And the tight quality "specs" for "Genetrons" are usually *bettered* in production. "Genetron" Super-Dry Refrigerants are available from wholesalers everywhere. So be sure to make your next order—"*Genetron.*"

QUICK FACTS on GENETRON Super-Dry Refrigerants

- Guaranteed exceptionally low moisture content.
- Noncorrosive to standard equipment materials, nontoxic, nonflammable, stable, safe.
- Critical and freezing points well outside range of operating uses.
- Solvent action on oil helps prevent solidification or congealing of lubricant; aids in lubrication of equipment; generally miscible with oil.
- Freely interchangeable and may be mixed in any proportions with comparable fluorinated hydrocarbons meeting the same strict refrigerant specifications.
- Available everywhere, from refrigeration wholesalers throughout the country.

GENETRON 11 ORANGE LABEL CCl_3F
Trichloromonofluoromethane

GENETRON 12 WHITE LABEL CCl_2F_2
Dichlorodifluoromethane

GENETRON 22 GREEN LABEL $CHClF_2$
Monochlorodifluoromethane

GENETRON 113 PURPLE LABEL $C_2Cl_3F_3$
Trichlorotrifluoroethane

GENETRON 114a BLUE LABEL $C_2Cl_2F_4$
Dichlorotetrafluoroethane

Allied Chemical

GENERAL CHEMICAL DIVISION
40 Rector Street, New York 6, N.Y.

MEN & COMPANIES

W. Clarke Swanson (left), Paul C. Gallagher, and Gilbert C. Swanson (right).

"On the House" . . . Coffee break (above) winds up the Swanson brothers' tour of newly-acquired Paxton & Gallagher Co., Omaha, Neb.

Cash sale ($11,548,226) covered all assets of Butter-Nut Coffee Div., and hardware div.

Only shuffle in P&G management will be to make room for Gilbert Swanson as board chairman, and Clarke Swanson as president. Former President Paul C. Gallagher will stay on as a board member.

Currently, Gilbert is a v.-p. of Campbell Soup Co., and Clarke a consultant and director. But the brothers emphasize that there'll be "no connection whatsoever" between the two operations.

Gilbert was chairman, and Clarke president, of C. A. Swanson & Sons Co. prior to merger of the frozen food firm with Campbell Soup Co. in '55.

Eyes New Market . . . New products being developed at Vacu-dry Co., Oakland, Calif., include some intended for retail trade. And the firm has hired Hal M. Chase as marketing consultant.

Mr. Chase previously was v.-p. and marketing director of Hawaiian Pineapple Co., Ltd. And at National Biscuit Co. in '54, he set up the Special Products Division to spearhead distribution of Nabisco's newly developed products.

Hal M. Chase

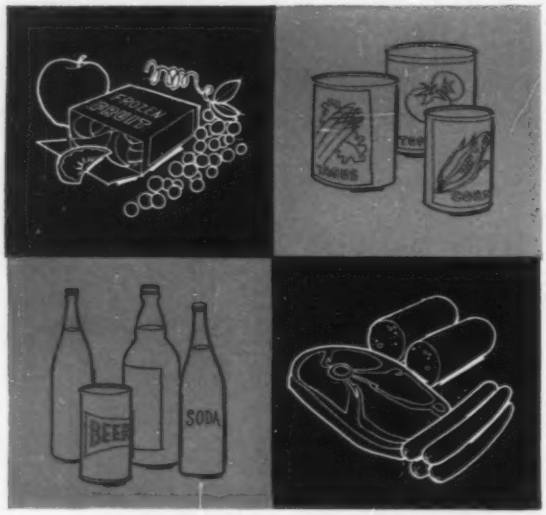
Henry J. Hoffmann

"Consumer Protection" . . . Winner of third annual Harvey W. Wiley Award of Assn. of Food & Drug Officials is Henry J. Hoffmann, chief chemist, Minn. Dept. of Agriculture.

Purpose of the honor is to emphasize role of regulatory officials in consumer protection.

Mr. Hoffmann was selected at AFDOUS's recent 62nd annual conference "for outstanding service and devotion to duty in administrating food and drug laws."

PRESERVE COLOR
PRESERVE FLAVOR
ECONOMICALLY
WITH
TAKAMINE
SODIUM ISOASCORBATE AND ISOASCORBIC ACID



These TAKAMINE antioxidants have proved completely reliable in the processing of frozen fruits, canned vegetables, beer, carbonated beverages, meats and fish. They protect the natural color and flavor and assure longer shelf-life. It's the easy, efficient way to control food quality, increase customer satisfaction, and assure greater profits for you!

It will TASTE better
LOOK
SELL better
with TAKAMINE products

Write
for
complete information
pertaining to your

Dwayne O. Andreas, chairman of Honeymead Products Co., Mankato, Minn., is new president of The Chemurgic Council.

Charles W. Kaufman, r&d director for National Dairy Products Corp., has been elected president of Packaging Institute.

John Shafer, v.-p. & gen. sales mgr. of Dole Hawaiian Pineapple Co., San Jose, Calif., has been elected president of Quartermaster Assn.

Andrew H. Talbot has resigned as public relations director of Pabst Brewing Co. A spokesman for firm says post will be eliminated.

Industry

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Falstaff Brewing Corp. will shoot for 15% of Calif. market, according to President Joseph Griesedieck. Expansion calls for acquisition of a brewery in Southern Calif. and possible increase in output of San Jose facilities. (Annual capacity, now 550,000 bbl., already has more than doubled over past 5 yr.).

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Associated Industries

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Kartridg-Pak Machine Co., wholly owned subsidiary of Oscar Mayer & Co., has purchased Mojonnier Associates, Inc., and Mojonnier-Dawson Co., both of Franklin Park, Ill.

W. R. Van Meter's new lab in West Hartford, Conn., will specialize in product and process development for food clients.

No. 1 in a series of Hoerner Packaging Experts

THIS IS THE HOERNER SPECIALIST FOR PACKAGING STICKY THINGS

Take raw rubber, for example. It sticks to things with irritating tenacity. Including shipping containers. But Hoerner experts developed a corrugated box with a special plastic coating inside. It doesn't take to rubber at all and is particularly easy to empty. If your product can be called gooey, don't be stuck with unnecessary handling costs. Call the Hoerner office or plant nearest you.

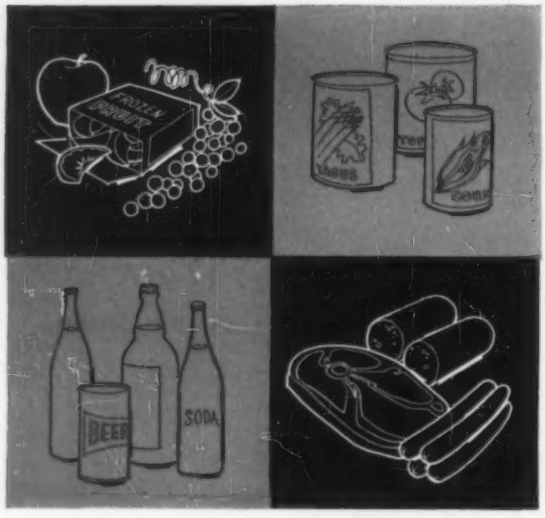
HOERNER BOXES, INC.

PRESERVE COLOR PRESERVE FLAVOR ECONOMICALLY

WITH

TAKAMINE

SODIUM ISOASCORBATE AND ISOASCORBIC ACID



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It will TASTE better
LOOK better
SELL better
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Write our Technical Service Department for complete information pertaining to your particular product problem!

TAKAMINE LABORATORY

DIVISION OF MILES LABORATORIES, INC.
CLIFTON, NEW JERSEY

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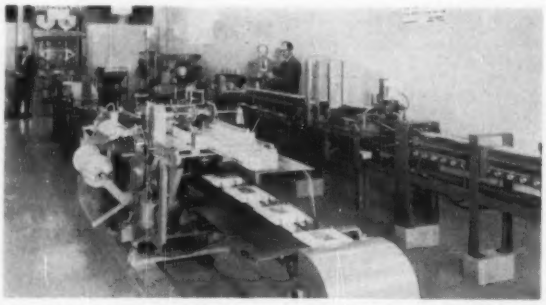

Diedericha & Griffin Co.'s newly-erected offices in Chicago include a permanent packaging machinery display. Processors may test behavior of their own products on equipment they are considering buying. Among numerous exhibitors are: Hayssen Mfg. Co., Schroeder Machines Corp., and Brown Filling Machine Co.

THIS IS THE HOERNER SPECIALIST FOR PACKAGING STICKY THINGS

Take raw rubber, for example. It sticks to things with irritating tenacity. Including shipping containers. But Hoerner experts developed a corrugated box with a special plastic coating inside. It doesn't take to rubber at all and is particularly easy to empty. If your product can be called gooey, don't be stuck with unnecessary handling costs. Call the Hoerner office or plant nearest you.

HOERNER BOXES, INC.

Corrugated specialists for Mid-America

GENERAL OFFICES—*600 Morgan St., Keokuk, Iowa* • **PLANTS**—*Keokuk, Des Moines and Ottumwa, Iowa Sand Springs, Oklahoma* • *Minneapolis, Minnesota* • *Fort Worth, Texas* • *Sioux Falls, South Dakota Fort Smith and Little Rock, Arkansas* • *Cajas y Empaques Impermeables, S. A., Mexico City D.F., Mexico*

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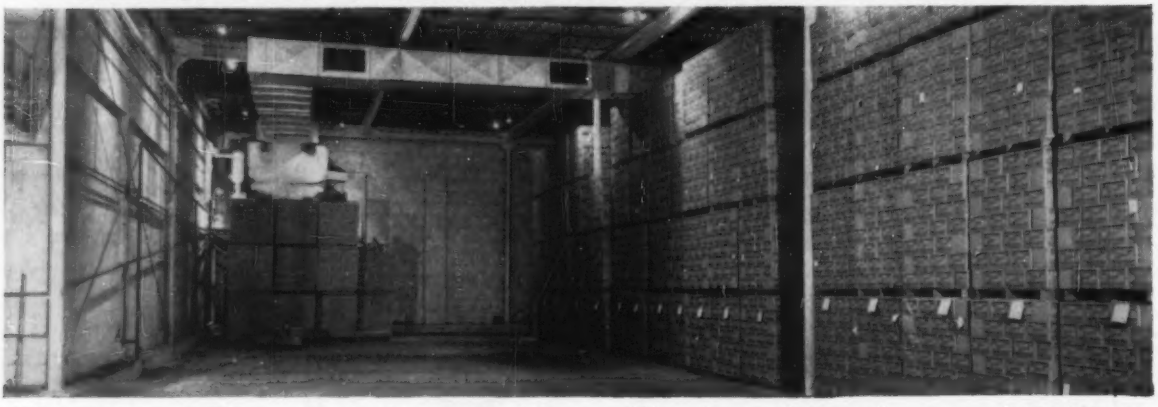
FOAMGLAS® INSULATION / waterproof, vapor-proof, strong, can't burn, acid-proof, vermin-proof, dimensionally stable

Maurice Warner, Plant Engineer

A single workman at the new Ocala warehouse installs a multi-layer insulating wall of FOAMGLAS. Applied to the asphalt covered building block wall, FOAMGLAS provides a moisture-proof, fire-proof envelope of insulation around the entire storage room. The lightweight, easy-to-handle blocks can be easily cut with ordinary tools.

For their new fruit concentrate warehouse . . . **LIBBY PICKED FOAMGLAS INSULATION TO KEEP CONSTRUCTION COSTS DOWN . . . INSULATION VALUE UP**

Cases of orange and lemon juice cans are safely stored from a spoiling hot Florida sun in —10°F envelope sealed tight by FOAMGLAS insulation. Used in the flooring, walls and ceiling, FOAMGLAS even forms the inside wall finish. Cases stacked better than 20 feet high attest to the unusual compressive strength of FOAMGLAS floor insulation, able to carry up to 7 tons per square foot.



Libby, McNeill and Libby cut construction costs in their new lemon and orange concentrate storage rooms at Ocala, Florida with strong, moisture-proof FOAMGLAS.

Maurice Warner, Company Plant Engineer, explained, "We picked FOAMGLAS insulation, first, because the strength and rigidity of FOAMGLAS enabled us to build free-standing walls of insulation, thus eliminating costly structural supports.

"And secondly . . . the highly perishable nature of fruit concentrate demands a constant —10°F temperature. This requires efficient insulation that remains unaffected by the excess condensation resulting from the wide temperature variations common to this area.

"Since the closed glass cell structure of FOAMGLAS makes it moisture and vapor proof, it stays dry . . . assuring us constant insulating efficiency and contributing toward low refrigerating costs."

Write us today for a free sample block and directions for six simple at-your-desk tests. Prove to yourself the value of FOAMGLAS for your particular insulation needs in walls, floors, ceilings, roofs, piping or equipment. Write to: Dept. O-128, One Gateway Center, Pittsburgh 22, Pennsylvania. In Canada: 57 Bloor Street West, Toronto, Ontario.

PC Glass Blocks are another outstanding building product of Pittsburgh Corning Corporation.

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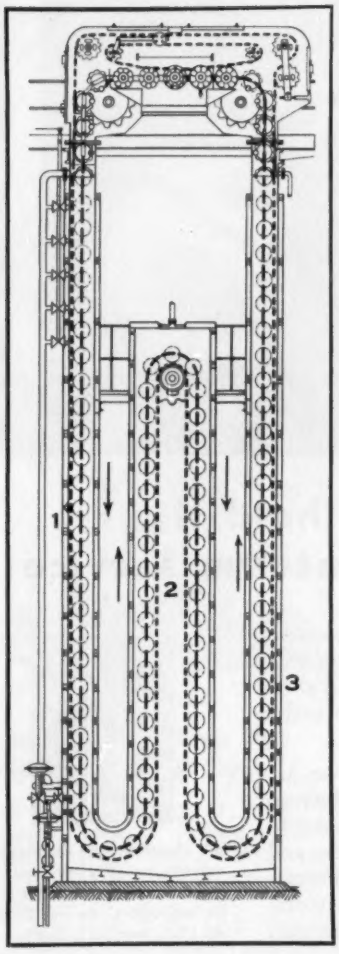
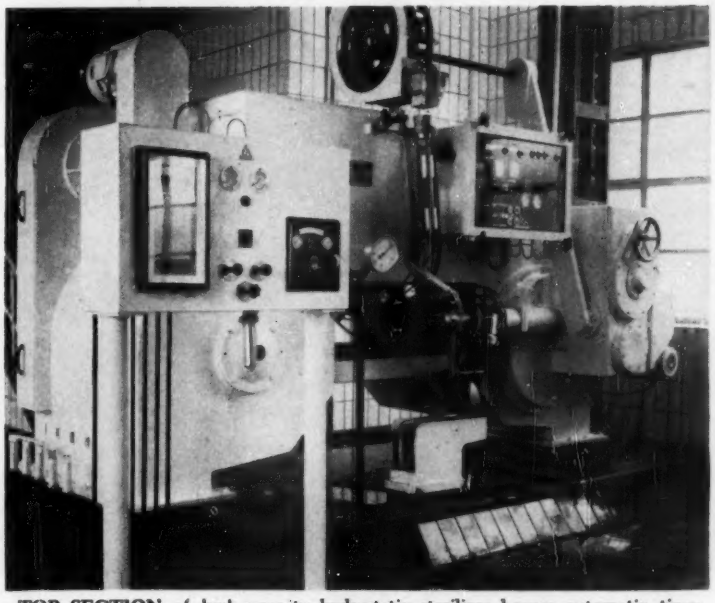
NEW EQUIPMENT & SUPPLIES



PROCESSING ZONE of unit comprises towers for product pre-heating by water (1), steam-sterilizing (2), and water-cooling (3). Two endless chains, from which rotating drums are suspended, convey cans through unit.



TOP SECTION of high-capacity hydrostatic sterilizer houses automatic time-temperature controls, also feed and discharge arrangements.

Latest Hydrostatic Sterilizer Cuts Operating Costs

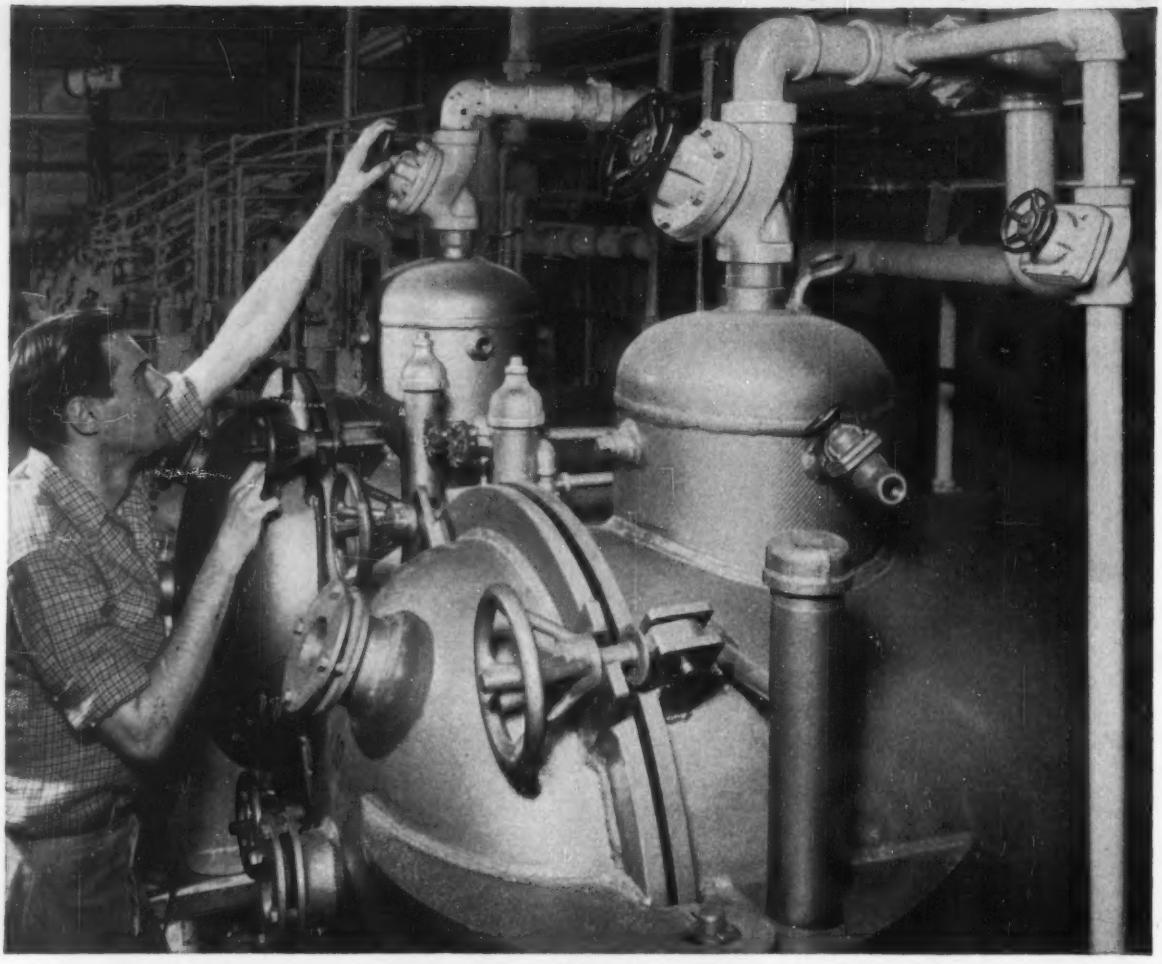
Highly efficient and economical heat-processing of canned goods, such as condensed milk, is reported for this rotary, continuous-automatic, hydrostatic sterilizer. Similar tower-type units are available for products in glass, and those not requiring rotation during processing.

Made in Holland, these sterilizers handle containers of any size and shape at capacities ranging 16,000 per hr. Changeover for container size is said to take only a few minutes, and equipment can be furnished with American controls.

In operation, thermal treatment is accomplished in three stages: (1) Preheating with water, (2) sterilizing with saturated steam, and (3) cooling with water. Steam consumption is minimized by effective heat recovery. For example, processing of 10,000 16-oz. cans per hr. requires about 880 lb. of steam. Water consumption is correspondingly low, in this case some 1,400 gph. Floor space requirement is about 13 x 8 ft., and tower height is no problem since structure can project through roof.

Illustrated unit (Stork), of the rotary type, consists of top-mounted feed, discharge, and control sections, and three towers below. Center tower is filled with saturated steam,

Packless valves assure Electron Products perfect processing



Crane diaphragm valves still hold tight after 18 months on 100-micron vacuum service

Electron Products Inc., Pasadena, Calif., forms special electronic parts of metalized paper. Processing—drying, deaerating, impregnating—is done under constant vacuum.

Valves, to hold the critical vacuum within a maximum leak rate of 100 microns for a 24-hour period during processing, had to be selected with care. Obviously not any valve would do. The choice—Crane diaphragm valves for high performance value.

After 18 months, these Crane packless valves continue to hold tight on this critical vacuum service for as long as 36 hours—and on occasion, over an entire weekend.

Crane packless diaphragm valves are widely used also in processing industries where absolute tightness is necessary to prevent leakage of volatile, corrosive and hard-to-hold fluids. Complete information is available from your Crane Representative. Or write for 24-page circular.

All about Crane diaphragm valves—patterns, body and trim materials, linings, 180 tested service suggestions, etc.—in Circular AD-1942. Send for it today.

CRANE VALVES & FITTINGS

PIPE • PLUMBING • KITCHENS • HEATING • AIR CONDITIONING

Since 1855—Crane Co., General Offices: Chicago 5, Ill.—Branches and Wholesalers Serving All Areas

the other two with water. Steam pressure is balanced by height of water columns which, in turn, is controlled by overflow valves in preheating tower (left in diagram). This permits precise regulation of sterilizing temperature.

Traversing the three towers are two endless chain conveyors, between which are suspended container-carrying rotating drums of stainless steel. Sterilizing time is controlled by chain's variable-speed drive, and a speed indicator shows operating capacity at any instant. As shown, drums are loaded and unloaded at top of unit, but any other feed and discharge locations can be used.—*Gebr. Stork & Co.'s Apparatenfabriek N.V., Post Box 3307, Amsterdam, Holland.*

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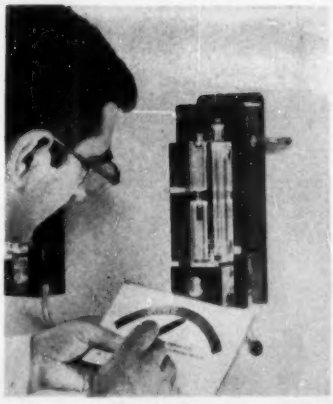
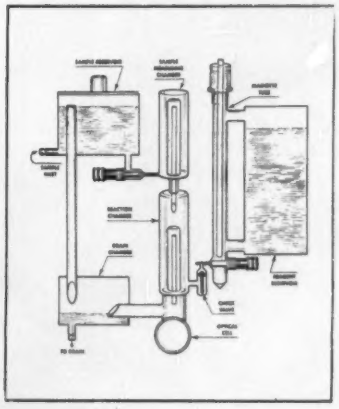




Colorimetric Analyzer Offers In-Stream Control

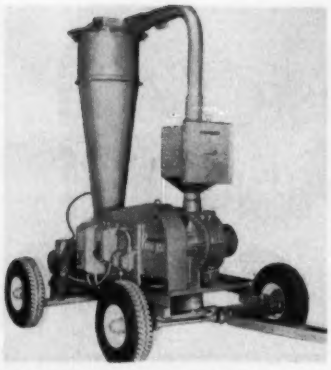
With this simple, automatic colorimetric analyzer, untrained personnel reportedly can make rapid in-stream chemical determinations merely by comparing the color of a titrated sample with standards. Accuracy ranges 2-5% of reading.

Known as Chemalyzer, unit has no moving parts and is powered by gravity. In operation (diagram), sample enters top reservoir, where an overflow tube maintains constant level. It then flows to a metering chamber and slowly rises to top of a siphon tube. At this point, sample (19 cc.) is discharged to a reaction chamber below by a siphon action.

Simultaneously, colorimetric reagent flows from a reservoir into reaction chamber at 3 cc. per cycle. As sample and reagent mix, they discharge into a lighted optical cell below. Here, color is observed and compared with standards.

Flow rates can be regulated to run 4-60 reactions per hr. And a photocell can be connected to optical cell to monitor color change and actuate either an alarm or an on-off control. —*Florida Instrument Co., 1300 E. Mermaid Lane, Philadelphia.*

Circle 18 on Reader Service Card

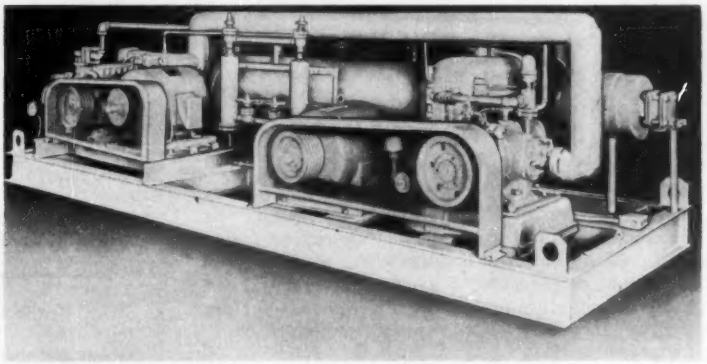


Portable Pneumatic Unit Speeds Material Flow

In-plant handling of free-flowing materials may be sped and simplified with use of this trailer-mounted, combination positive-and-negative pressure pneumatic unit.

Less than 8 ft. high, conveyor (Pneu-Pac) may be used almost anywhere in the plant. For high capacity, it employs a 14x10 in. rotary-vane airlock feeder. Also included is an in-line filter with easily removable bag.—*Sprout-Waldron & Co., 130 Logan St., Muncy, Pa.*

Circle 17 on Reader Servie Card



2-Stage Compressor Unit Cuts Refrigeration Costs

This package unit is designed to cut high operating and maintenance costs of equipment forced to handle excessive pressure differentials in low-temperature applications. The trend to use of lower room temperatures is evident in frozen-food distribution warehouses and in ice cream hardening rooms, where products are being pre-cooled to offset temperature rise in transit.

For high efficiency at low suction and high discharge pressures, two-stage unit combines a rotary compressor with a reciprocating type. In addition to design simplicity, the rotary has high operating efficiency at low pressures. And high-speed reciprocating compressors excel at pumping against high discharge pressures. This arrangement guards against excessive pressure differences and high discharge temperatures at either compressor. (Turn page)

Best way to Increase Flavor, Texture and Value

Food processors have long relied upon the quality ingredients distributed to the food industry by Corn Products Sales Company: Cerelose dextrose sugar; Buffalo, Hudson River and Snowflake starches; Rex and Globe corn syrups. These fine products bolster the flavor, texture and color of fine foods—factors that enhance food value and keep buyers reaching for your brand.

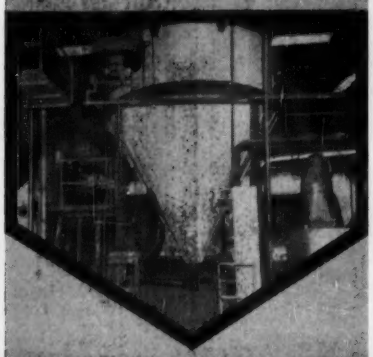
The sugars, syrups and starches available from Corn Products Sales Company do more than increase these desirable food qualities: they save on production costs as well. These *natural* products are easy to handle, lead to more efficient, economical processing. Their carefully controlled quality, uniform from day-to-day, means your formulations can be consistent and standardized.

The experience amassed by our technical representatives in incorporating Corn Products sugars, syrups and starches in virtually every type of fine food product sold today, is always at your service. For full information on how these quality-enhancing ingredients can be adapted to your processing, call our nearest sales office or write direct.

CORN PRODUCTS SALES COMPANY • 17 Battery Place, New York 4, New York

Fine Products for the Food Industry: CERELOSE® dextrose sugar • BUFFALO®, HUDSON RIVER® and SNOWFLAKE® starches • REX® and GLOBE® corn syrups

CUSTOM SPRAY DRYING OF HEAT-SENSITIVE FOODS



To food processors and manufacturers, Nerco-Niro offers an economical, time-saving large tonnage custom spray drying service at its pilot plant at Netcong, New Jersey. Large or small scale spray drying tests can also be made under expert engineering supervision. Drying equipment includes a 32" diam. Laboratory Unit; a 7'6" diam. Pilot Size Unit, and a 16'0" diameter. Commercial Size Unit, all of stainless steel throughout.

Nerco-Niro has the most fully equipped plant of its kind in the U.S. If you have a difficult-to-dry food product, it will pay you to investigate the Nerco-Niro "Gentle-ized" Spray Drying. Write today for Bulletin #232.

NERCO NIRO

Nerco-Niro Spray Dryer Div'n.

NICHOLS

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70 Pine St., New York 5, N.Y.
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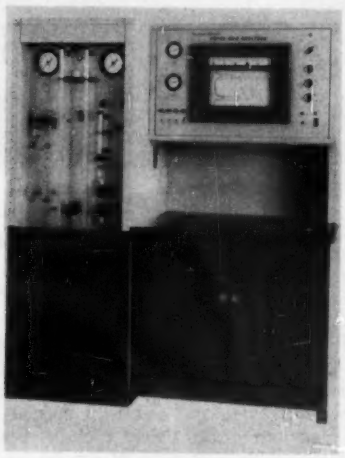
Circle 306 on Reader Service Card

Equipment & Supplies

In operation, refrigerant gas from cooling coils or unit cooler in storage rooms is received by the rotary and compressed to 20 psig. Discharge gas from the rotary is then passed through an intercooler where it is conditioned before entering the high-stage unit. To increase system's efficiency, liquid refrigerant from condenser is pre-cooled in a between-stage intercooler.

No jacket water is necessary to operate the two-stage system. Jacket cooling on the rotary is provided by an oil system with a refrigerant-controlled cooler. Unit produces 12 tons of refrigeration when compressing Freon 12 from 5.45 in vacuum to a condensing pressure of 136 psig. Both compressors are driven by separate 20-hp. motors.—*Freezing Equipment Sales, Inc., York, Pa.*

Circle 19, on Reader Service Card



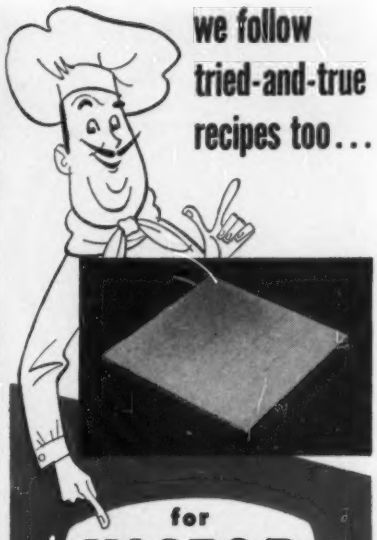
Faster Amino Acid Analysis Offered by Automatic Unit

Time for complete analysis of amino-acid samples may be cut to 24 hr. or less with use of this new instrument.

Known as Amino Acid Analyzer, it gages the 20 or more amino acids most commonly found in protein hydrolysates. Entire process is virtu-

Want More Information?

It's free—and easy to get. Simply note here the items on which you want more details, then circle each key number (there's one at the bottom of each item) on the handy Reader Service Postcard—back of book. Then sign your name and address and mail. For more convenience, too, these items are listed and keyed in the Reader Service Section.



for VICTOR BELTING

Exact measures of the best materials—careful processing techniques—they're as much a part of making Victor Belting as they are of making your food products.

To make sure that we're following the *right* recipes, our research department keeps careful, continual checks on *everything* that goes into Victor Belting and *every purpose* for which it's used. That's why—with complete confidence—we recommend for *your* food handling:

VICTOR SUPRENE... special-woven cotton duck belting thoroughly impregnated with exclusive Neoprene compound. Waterproof, highly resistant to grease and most food chemicals, smooth-surfaced, and easily cleaned.

VICTOR 475...highest quality solid-woven cotton belting impregnated and coated with a special Neoprene compound. Developed for use where laboratory cleanliness is a *must*. Washable with hot water or steam. Resists rancidity and deterioration.

For food handling the modern sanitary way select from—

A COMPLETE LINE Including:
• Neoprene Belting • Balata Belting • Solid-Woven Belting—untreated, impregnated, coated—many widths and plies • Canvas Stitched Belting • Belting Specialties.

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Balata & Textile Belting Co.

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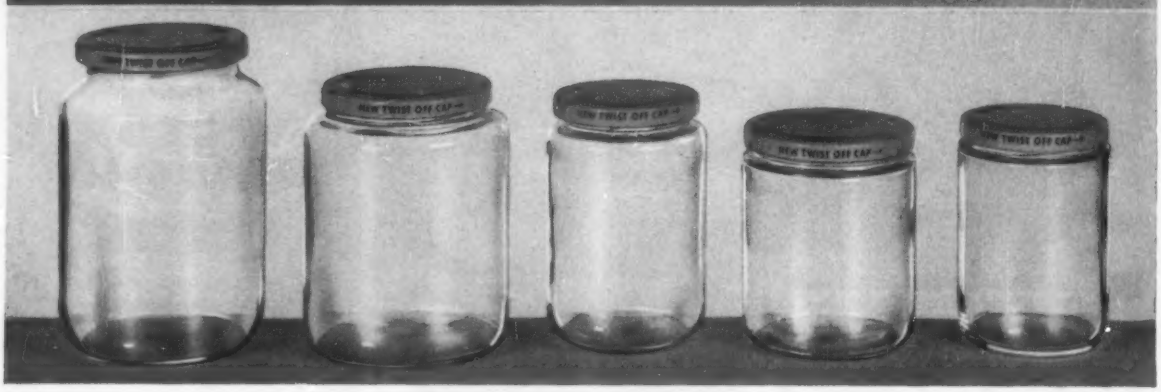

meet the newest and the most complete —in jars, by

Always first, with the best by far, H-A offers something new, in a full, new line of jars! They merchandise your products better, and give your customers a new grasp on convenience. They accommodate the new twist-top caps, and sell with special point-of-sale appeal. Easy to fill, smooth to run, a snap to close—beauty puts you way out front, in crystal-clear glass by H-A!

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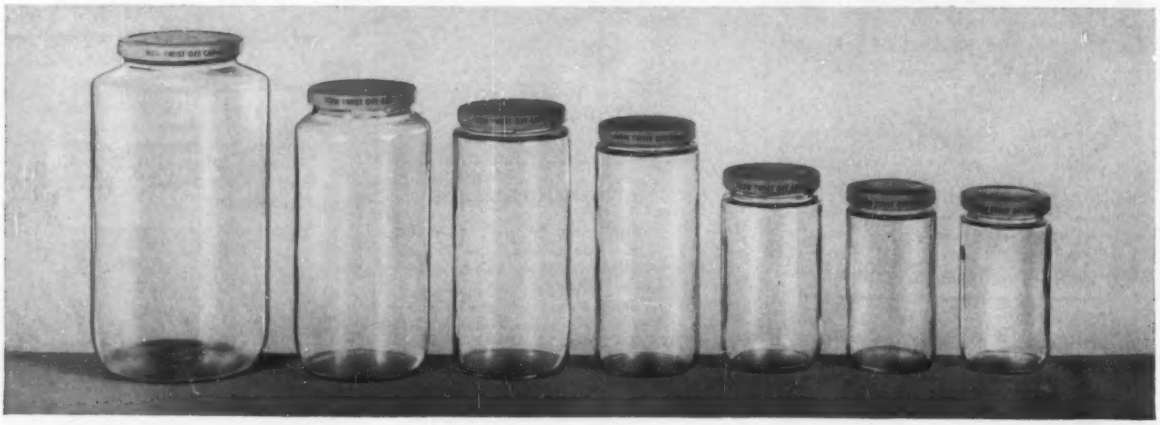
HAZEL-ATLAS GLASS division of **CONTINENTAL CAN COMPANY**

WHEELING, WEST VIRGINIA



ally automatic. Amino acids are first separated in passing through an ion-exchange column containing special resin and buffer solution. Acids from column are continuously reacted with ninhydrin reagent to form a characteristic color.

Optical density is measured by a built-in colorimetric unit, and values are plotted automatically by a multi-point recorder. Results are accurate to 3%. Time position of each peak identifies the particular acid, while its quantity is determined by calculating area under peak.—*Beckman Instruments, Inc., Spinco Div., Stanford Industrial Park, Palo Alto, Calif.*

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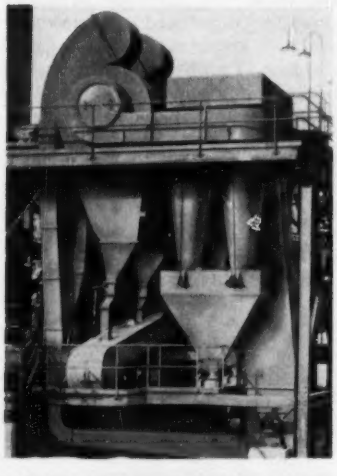
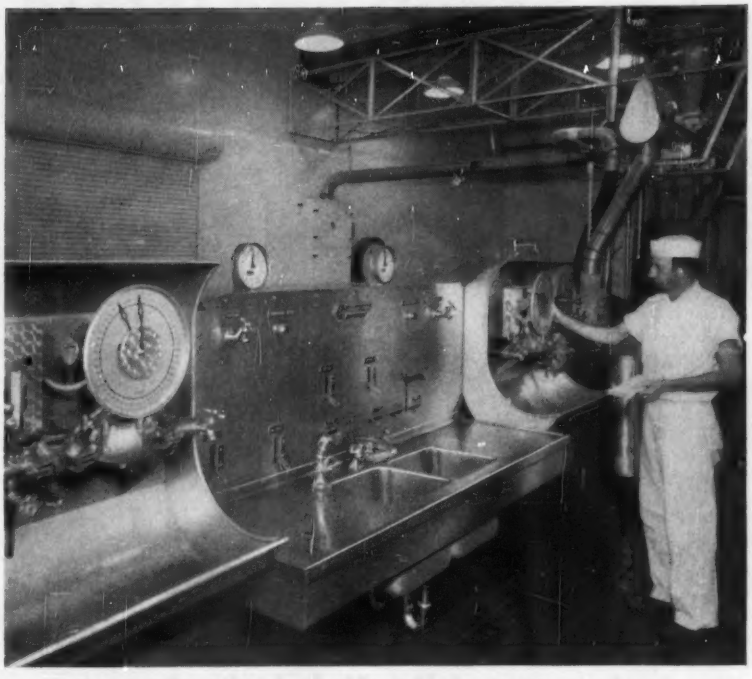


Precision Classifier Excels In 200-400 Mesh Range

Employing special aerodynamic design to balance critical centrifugal and drags forces in the classifying zone, this unit reportedly separates over 98% of particles under 44 microns (325 mesh)—with no oversize material in the fines.

Known as Centrifugal Classifier System, it can be sized to handle from 100 lb. to 100 tons of feed per hour. Particularly recommended for separations in the 200-400 mesh range, units have no moving parts and use 0.04-.05 hp. per ton per hr.

In operation, feed and air enter classifier through a sharp bend at top, and are separated by centrifugal force. Air stream passes behind a baffle plate against which feed material slides, then crosses a curtain of feed for intense scrubbing action. Large particles are immediately precipitated by gravity, intermediate and finer ones are carried in a spiral



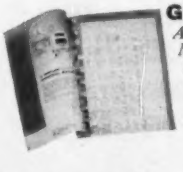
How Langendorf Bakeries

SAVE WEIGH, WAIT and DOUGH

with NEPTUNE *liquid* METERS

Taste-perfect baked goods and low cost operation depend on getting exactly the right amount of each ingredient into the mix with minimum handling. That's what these four Neptune meters are doing for Langendorf United Bakeries, Inc....saving materials, time, labor...eliminating the hauling of bags and buckets. Liquid sugar, hot shortening and water are all moved and measured "in the pipe". Accurate *metered* measurement keeps the profits in production, and uniform flavor in the goods.

Savings in time and ingredients can be made in *your* plant by adding Neptune meters wherever liquids are batched, blended or transferred. Tell us what you want meters to do and we'll gladly give you recommendations.



GET THE FACTS
Ask for helpful Meter Data Bulletin 566 CF See Neptune Data Pages in Chemical Engineering Catalog.

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For more data, circle 309 on Reader Service Card

STAINLESS COSTS LESS

The big PLUS SERVICE EXPERIENCE RESEARCH PERFORMANCE in Oakite

New, longer-lasting chain lubricant cleans while it lubricates

CONTINUING RESEARCH in materials opens new opportunities for up-dating maintenance and saving time and money.

Chain lubrication, done the Oakite way, for example, can help you cut down "bottlenecks" and bottle breakage. With newly developed Oakite LC106, chains get the "slip" that reduces gate pressure, bottle impact and jam-ups. It keeps chains clean . . . free of bottle soiling build-up. It reduces drag on motor, also cuts downtime for maintenance.

On top of this, users report up to 25% better "mileage" than previous material. As another "PLUS" a wide range of Oakite Lubricators is made available for continuous application of lubricating solution at proper rate without waste or drippage.

The big PLUS in Oakite

With every keg of Oakite material, you get plus benefits that help you reduce your cleaning costs. There's the personal help of the Oakite man, the experience of the entire Oakite organization; the latest information on modern cleaning methods to save extra work and time; *guaranteed* results; constant research devoted to development of newer, better materials. Ask your local Oakite man. Or, send for Bulletin F-10347. Oakite Products, Inc., 27A Rector Street, New York 6, N. Y.

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path around the exhaust orifice.—*Buell Engineering Co., 123 Williams St., New York City.*

Circle 21 on Reader Service Card

Plastic-Coated Cases Washed at 960/Hr.

Returnable cases with special plastic coatings may now be washed in a machine handling 960 per hr.

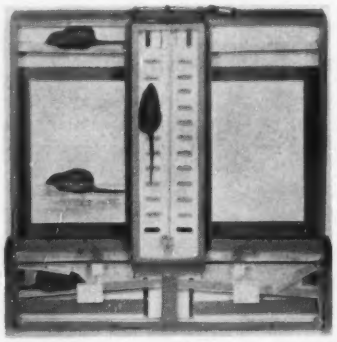
Easily adjusted to take cases of all standard sizes, washer requires only one operator who selects case, removes partitions, turns case upside down, feeds it into washer, and operates controls.

In operation, case enters machine upside down and in a sidewise position. It is first subjected to vibration and compressed air blowout, then to a combination foamer and detergent. Two brushes at each end of case give thorough cleaning.

Next, case is automatically turned 90 deg. and passes between brushes that clean sides, bottom, and flaps. It is then rinsed inside and out, air-blown inside and outside, and discharged onto a conveyor in an upright position with flaps open.

Cleaning compound costs about 1c. a case, and machine uses some 4 gal. of water per min. Unit is about 22 ft. long, 3½ ft. wide, and 6½ ft. high.—*River Raising Paper Co., Monroe, Mich.*

Circle 22 on Reader Service Card



Aquatic Trap Catches 100 Mice Per Setting

In catching over 100 mice at a single setting, this aquatic mouse trap uses neither poison nor electricity. Instead, its ramps and dumping mechanisms are actuated by weight of mouse.

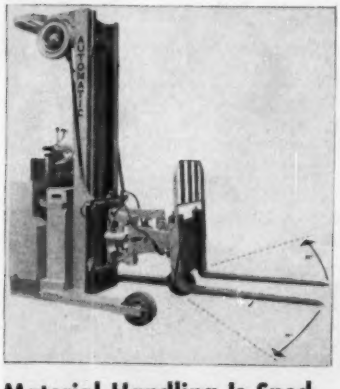
In operation, rodent is enticed into one of two bottom entrances by the smell of food hidden in a sepa-

rate chamber. Once mouse enters the hole, he walks up and tips a seesaw-like ramp. This closes trap door and sets trap for next mouse. It also bars trapped mouse from food chamber.

Next, pin holes of light at top of trap lure mouse up a ladder into side of trap. Weight of rodent causes ramp on which it walks to tip sideways and drops mouse into a water-filled tank where it drowns.

Unit is made of corrosion-resistant steel, since freedom from rust is essential for proper operation of delicately balanced parts. Only three operations are needed to set the trap—filling the water chamber (2½ qt. capacity), inserting bait in tray, and pressing set buttons to open both doors. A trap measures 15½x3x15 in., weighs 12 lb.—*Self-Sett Mouse Trap Co., 728 Leader Bldg., Cleveland.*

Circle 23 on Reader Service Card



Material Handling Is Sped By Unit's Swinging Forks

Narrow-aisle warehousing may now be simplified with the use of this new fork truck, which projects forks forward to "reach out" for a load and swing in unison, right or left of center up to 30 deg. Units are available in 2,000-, 3,000-, and 4,000-lb. capacities.

Called Swing Reach Truck, its 60 deg. fork radius eliminates need for positioning to pick up a load. Operator makes necessary adjustments merely by swinging the forks.

Maximum lift is 130 in. from a collapsed mast height of 83 in. Double-hinge design virtually eliminates deflection, and a tilt device is optionally available. Reach and swing mechanism can be operated simultaneously or individually through use of one control lever.—*Automatic Transportation Co., 149 W. 87th St., Chicago.* Circle 24 on Reader Service Card

STAINLESS COSTS LESS THAN ALUMINUM—

Do you know that the square-foot cost of stainless steel sheet for curtain wall panels is usually equal to or lower than aluminum when compared in thicknesses of equal indentation resistance? For example, Type 302 stainless steel, .022" thick is equal to .051" aluminum and costs only 62¢ per sq. ft., as compared to 67¢ per sq. ft. for 3003-H14 anodized aluminum.

Washington Steel Corporation

WASHINGTON, PENNSYLVANIA

For additional information on all gauges, fill in and mail the coupon.

MAIL COUPON *Today!*

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Gentlemen:
Please send me full information on comparative costs of stainless steel vs. aluminum for curtain wall panels.

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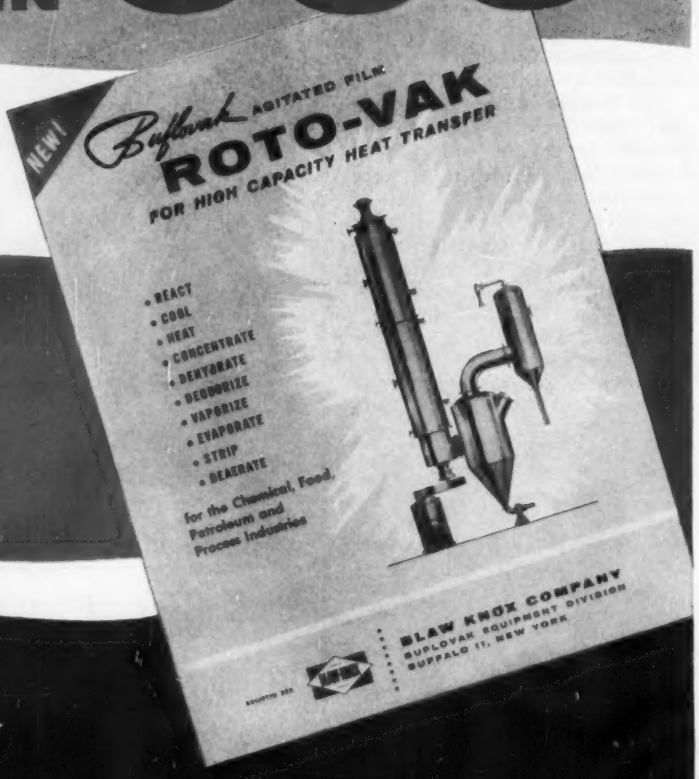
BULLETIN 383

gives you the inside story

on Buflovak's agitated film Roto-Vak —

a new advance in high density heat transfer

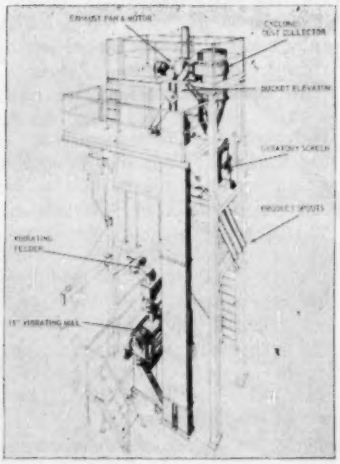


Bulletin 383 is yours for the asking. Your copy will show you how this new Roto-Vak can handle viscous, foamy or heat sensitive materials with new efficiency, lower cost.

Bulletin 383 points the way to new opportunities as it shows how this Roto-Vak provides high density concentration of a whole range of new materials. Roto-Vak can widen your processing and product horizons. Get your copy today.

BLAW-KNOX

BLAW-KNOX COMPANY
Buflovak Equipment Division
1631 Fillmore Avenue • Buffalo 11, New York

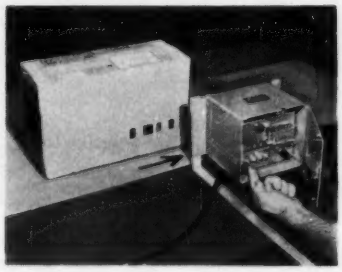


Package Grinding Plant Cuts Costs, Space Requirement

Available as a package unit, this compact dry grinding plant is designed for precision size reduction. Capacity ranges to 1 ton per hr., with feed densities of 30-300 lb. per cu. ft.

System is engineered around a new vibrating mill that offers up to 40 times the output of conventional models per unit of available grinding volume. All auxiliary equipment, such as vibrating feeder, elevator, gyratory screen, scales, and dust collector are conveniently accessible by ladders and walkways. Individual parts and components are match-marked to facilitate erection.—*Allis-Chalmers Mfg. Co., Milwaukee.*

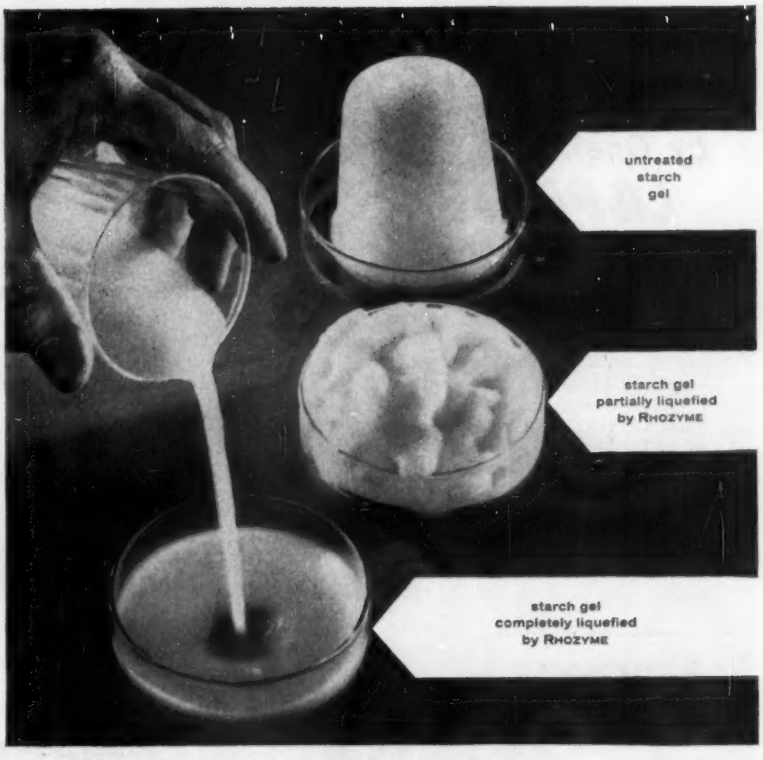
Circle 25 on Reader Service Card



Cases Are Identified, Routed By Conveyor-Line Unit

Automatic selection of any type case, box, or carton, regardless of size or shape, is offered by this unit.

Known as Model 140, it employs a 5-bar code to count and sort any of 30 different items as goods move along conveyor at speeds up to 180 fpm. It also provides an output sig-



RHOZYME

Diastatic Enzymes

For controlled processing of food starches

By using RHOZYME Diastatic Enzymes to solubilize, saccharify, or modify food starches, you can have more appealing end products and easier processing without impairing other vital food properties. As in the case of the starch gels shown, RHOZYME Diastatic Enzymes bring about specific, controlled liquefaction with no undesirable side reactions.

This selective action, coupled with the simplicity and low cost of enzyme treatment, makes these diastatic enzymes efficient agents to perform many other processing operations such as . . . recovery of sugar from candy scrap by liquefying the starch and thereby permitting color and flavor removal at higher solids levels . . . helping to lower production costs of pre-cooked breakfast cereals by allowing processing at higher solids levels . . . improving the texture, grain, and shelf-life of bread.

If you have a starch processing problem, why not write to Dept. SP for additional information on RHOZYME Diastatic Enzymes?

RHOZYME is a trade-mark, Reg. U.S. Pat. Off. and in principal foreign countries.

Chemicals for Industry

ROHM & HAAS COMPANY

WASHINGTON SQUARE, PHILADELPHIA 5, PA.

Representatives in principal foreign countries

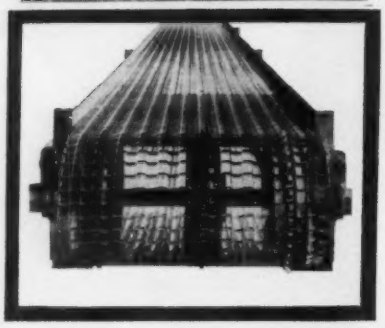
For more data, circle 313 on Reader Service Card

Easily Sterilized While in Motion

by One Man

LA PORTE

FLEXIBLE STEEL CONVEYOR BELTING



The open mesh feature of the La Porte belting makes sterilizing simple and easy. One man can do the job with a steam gun in minutes, eliminating down time and extra labor costs.

In addition, it assures positive drive on the sprocket, and free circulation of air and liquids around products in process.

Made of galvanized steel of the best quality, La Porte belting is available in ½" x 1", or 1" x 1" in any length and practically any width.

LA PORTE

Ask your Mill Supplier or write for illustrated literature, prices.

MAT AND MFG. CO.

BOX 124 *La Porte, Indiana*

For more data, circle 314 on Reader Service Card

CUT COSTS WITH SEALTITE

- Delivers a well settled, nicely squared bag at top, bottom and sides
- Pre-scored, double fold, uniformly glued seal keeps product in and dirt out
- Uses any standard make of gusseted bag — no royalties
- Seal readily opened, yet tamper-proof
- Seals 30 to 50 bags per minute
- Users report costs reduced up to $500.00 per month per machine

Write for complete information

CONSOLIDATED PACKAGING MACHINERY CORP.

BUFFALO 13, NEW YORK

Equipment & Supplies

nal that may be used to activate a conveyor switch, thus can automatically control flow to carton sealing, storage, or automatic palletizing.

In operation, cartons are coded with 5 vertical bars, and selector switches are set to recognize any of the markings. Code may be applied during carton printing, since no special inks are required. Selector may be reset to recognize a different item by a simple control.

Perfect orientation of cartons is not necessary, as markings may be read when distance is varied by several inches and with angles of skew up to 10 deg. Transistorized unit measures 7½x6½x6 in.—*Atronic Products, Inc., 1 Bala Ave., Bala-Cynwyd, Pa.* Circle 26 on Reader Service Card

New Bake-Pan Liner Gives Instant Release of Goods

Greasing of commercial bake pans and trays may be eliminated with use of a special paper liner that also cuts pan-washing time.

Called "Patapar Easy-Strip Parchment", its improved release qualities permit instant de-panning of sticky baked goods. In addition, liners promote even product browning without burnt bottoms. They are available in all standard-pan sizes. —*Patterson Parchment Paper Co., Bristol, Pa.*

Circle 27 on Reader Service Card

INGREDIENTS

Clear Thickener Improves Product Quality, Stability

A new tapioca-base stabilizer and thickener reportedly ups product saleability while cutting production costs.

Called Kreamgel, it is offered for items requiring a clear, ungelled thickener—pie and cake fillings, clear gravies, sauces, and soups. Product is compatible with all food acids and imparts high gloss for retention of natural food color. In addition, its freedom from cereal taste and odor eliminates masking of flavor, a factor enabling use of up to 50% less flavoring. Savings in heating requirements are also realized because of product's 180F. cook-up temperature.

In pie and cake fillings, thickener provides uniform fruit distribution and suspension. Shelf life of frozen pies and cakes is extended because

JAMISON flexidor*

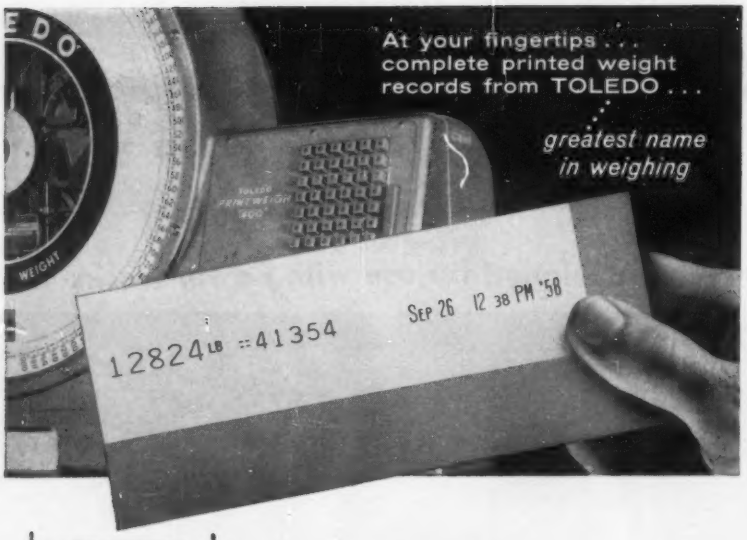
All-neoprene batten door designed for use with power trucks

*Jamison Trademark

Flexidor is light and resilient to absorb and dissipate the shock of impact; reinforced door noses add strength, prevent buckling or wrap around on impact. Free-swinging door suspension provides minimum impact resistance. Jamison two-way gravity cam hinges assure fast closing.

Flexidor is available in a full range of sizes for use in new construction or to replace rigid battens. Complete information is available from the Jamison Cold Storage Door Co., Hagerstown, Md.

JAMISON
COLD STORAGE DOORS



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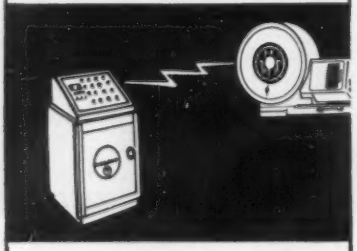

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of relatively high freeze-thaw stability.—*Morningstar Paisley, Inc.*, 630 W. 51st St., New York City.

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CHEMICALS

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A clear red concentrated liquid, free from carbolic odor, product is available in 55-gal drums, 5-gal pour-spout pails, and 1-gal. jugs.—*Columbia Wax Co., Glendale, Calif.*

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BRIEFS

Centrifugal Impact Mill operates at any impact velocity to 25,000 fpm. Unit is adaptable to batch or continuous operation, has 27-in. direct-driven rotor, and handles 10 tons per hr.—*Safety Industries, Inc., Entoleter Div., P. O. Box 904, New Haven, Conn.* (30)

Pneumatic Wheat-Cleaning System including vertical inlet separators, atomizing damper, and dust collector handles 450 bu. per hr. Entire operation is controlled from remote panel.—*Miag Northamerica, Inc., 1616 S. 8th St., Minneapolis.* (31)

Automatic Packaging Line fills viscous materials in 5-gal. open-head pails, labels the container, and crimps the cover. Straight-line unit employs precision air-operated filling nozzles and 'no pail—no fill or label' devices. Capacity: 8-16 containers per min.—*MRM Co., 191 Berry St., Brooklyn, N. Y.* (32)

Mechanical Adjustable-Speed Drive offers infinite number of settings over 8:1 range. Drive (Allispede) operates on a.c. power and is available in 1-20 hp. ratings, output speeds 1-10,000 rpm.—*Louis Allis Co., 427 E. Stewart St., Milwaukee.* (33)

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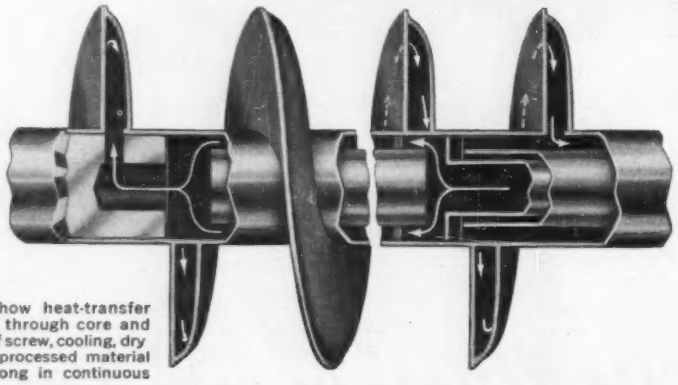

Arrows show how heat-transfer medium flows through core and hollow blades of screw, cooling, drying or heating processed material as it moves along in continuous bulk flow.

In the Sugar industry alone, Holo-Flite equipment cools more than 1,600,000,000 lbs. a year. And this is just one of many industries where Holo-Flite's many installation and operating advantages are making major savings possible.

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- With Holo-Flite, sugar is cooled as needed, eliminating costly bulk refrigeration prior to use!

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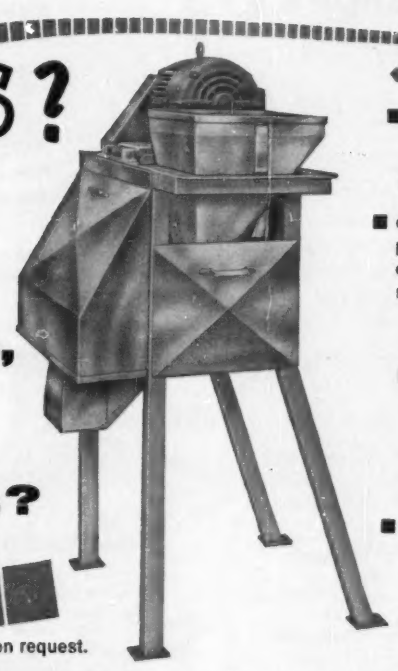

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detailed in reprint. Includes data, tables, flow diagrams, and graphs. 19p.—Rohm & Haas Co., Philadelphia. (82)

Vacuum Processor. Explains operating technique, presents data on broad spectrum of applications.—Rodney Hunt Machine Co., Orange, Mass. (83)

PACKAGING

Aerosol Filling Equipment detailed. Also covers improved tablet press. 4p.—Arthur Colton Co., Detroit. (84)

Cross-Wrap Unit adjusts quickly to wide range of package sizes. 3p—Toledo Scale Corp., Toledo, Ohio. (85)

Packaging Machinery. Details company's complete line of filling, packaging, wrapping, and paper box machines. 4p.—FMC Packaging Machinery Div., Stokes & Smith, Philadelphia. (86)

Collapsible Tubes, their selection and specifications. Also details plastic closures, specialties, custom molded tips and caps. 6p.—Wheeling Stamping Co., Wheeling, W. Va. (87)

Automatic Weigher and filler for packaging free and non-free flowing materials at 18-20 per min.—Richardson Scale Co., Clifton, N. J. (88)

Microcrystalline Wax described with data on penetration, viscosity, density, and solubility at various temperatures. 16p.—Sun Oil Co., Philadelphia. (89)

Flexible Packaging Machine forms bags (1½x2½ in. to 10x18 in.), fills (⅞ oz. to 5 lb.), heat seals them automatically at up to 45 per min. 4p.—Mercury Heat Sealing Equipment Co., Philadelphia. (90)

Case Opener for 2-flap beer cases. 2p.—Radio Corp. of America, Camden, N. J. (91)

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Pneumatic Systems for transferring ground products from attrition mills. 2p.—Sprout, Waldron & Co., Muncy, Pa. (92)

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Cable Conveyors described and illustrated. 4p.—E. W. Buschman Co., Cincinnati. (97)

Anti-Skid Coating for shipping containers that reduces product damage, minimizes danger from cascading boxes.—Product Information Service, E. I. DuPont de Nemours & Co., Wilmington, Del. (98)

Fork Truck. Engineering, design specifications, and construction details on recently introduced 2,000 lb. 35 hp lift units. 8p.—Allis-Chalmers Mfg. Co., Milwaukee. (99)

Pallet Loader for automatic high-speed case handling. Features and operation described. 4p.—Radio Corp. of America, Camden, N. J. (100)

SANITATION & MAINTENANCE

Infestation Control. Details system and equipment for destroying insect eggs, larvae, pupae, adults in food product. 3p.—Entoleter Div., Safety Industries, Inc., New Haven, Conn. (101)

Gas Scrubber employs 3-way action to trap material below 5 micron size. Described as new approach to dust, fume, and odor removal, typical applications are outlined. 6p.—The Johnson-March Corp., Philadelphia. (102)

Sewage Plants. Details prefabricated aerobic digestion systems for small installations. 4p.—Yeomans Bros. Co., Melrose Park, Ill. (103)

Power Sweepers for indoor and outdoor operation. 4p.—Patch & Kase Corp., Azusa, Calif. (104)

Floor Seal. New quick drying compound for wood or concrete. 4p.—Tremco Mfg. Co., Cleveland. (105)

INGREDIENTS

Flavor Catalog for wholesale purchasers. Describes over 30 different flavor groups, and includes application charts. 28p.—Fritzsche Bros., Inc., N.Y.C. (106)

Bacon Cure. Cites advantages, tells how to use Cylan in sugar-free curing process. 6p.—E. I. DuPont de Nemours & Co., Wilmington, Del. (107)

Price List and catalog of essential oils and aromatic chemicals contains descriptions and market information on balsams, gums, certified colors, concentrated citrus oils, vanilla concentrates, etc. 36p.—Dodge & Olcott, Inc., N.Y.C. (108)

INSTRUMENTS

Metal Tube Rotameters for hazardous and high-pressure fluids, and steam. Contains illustrations, graphs, tables. 4p.—Schutte & Koerting Co., Cornwells Ht's., Pa. (109)

Instruments available for quick shipment—indicators, transmitters, recorders, controllers. 52p.—Fischer & Porter Co., Hatboro, Pa. (110)

Pressure Switch that controls liquid or gas pressures up to 3,000 psi. Features and operation described. 2p. — Minneapolis - Honeywell Regulator Co., Philadelphia. (111)

Air Control Valve. Details 2-way unit. Gives size, price, and uses. 2p.—OPW-Jordan, Cincinnati. (112)

MANAGEMENT

Automation. Details on firm offering professional assistance in application of automation techniques.—Automation Management, Inc., Westboro, Mass. (113)

Data Processing. Non-technical description of instantaneous random access feature in typical business applications such as inventory control, sales analysis, billing, cost control, and others. 8p. —Remington Rand, N.Y.C. (114)

Materials Handling Manufacturer. Illustrated booklet contains company's history, details on its facilities, products, services, and installations. Lists authorized distributors. 60p.—Link-Belt Co., Chicago. (115)

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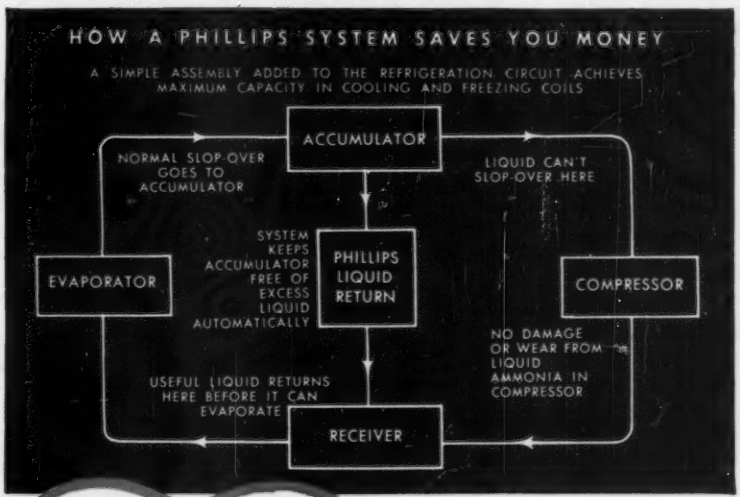
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NO DAMAGE OR WEAR FROM LIQUID AMMONIA IN COMPRESSOR
USEFUL LIQUID RETURNS HERE BEFORE IT CAN EVAPORATE
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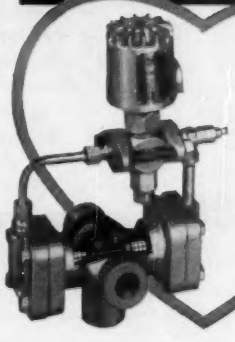

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This three-way valve, the heart of the Phillips system, helps keep it simple. The three-way valve teams up with the check valves and dump trap to keep liquid level down in the accumulator: The valve opens the line between the accumulator and Phillips liquid dump trap, to drain the accumulator; then lets high-side pressure through to empty the trap into the receiver. Process repeats automatically, as required.

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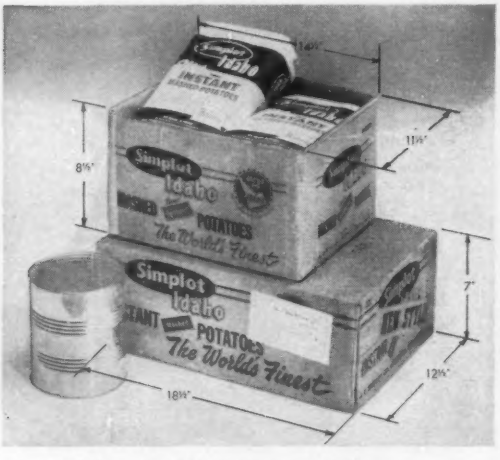
Packaging is more than "Skin Deep"!

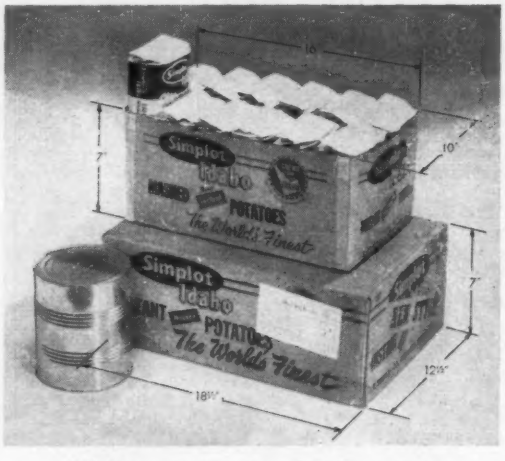
PACKAGING PROBLEM

The Simplot Company was packaging their Instant Mashed Potato granules in #10 tin cans. They were concerned with the package because some small restaurants were unable to use a complete can at one time (each can contained enough product for 150 servings). The cans were expensive, and their weight made shipping charges high.

Simplot working with Western-Waxide's Research and Development Laboratory went in search of a package that would provide the needed protection, convenience, and economy.



10# bags save 201 cu. in., carry 40 lbs. per case!



3# bags save 498 cu. in. per 36 lbs. product!

SOLUTION:

Western-Waxide's Research and Development Laboratory had previously developed a bag for a dried milk producer. Called the Crown Dri-Pak* bag, its construction is bleached kraft paper laminated to .00035" foil with polyethylene coating over the foil. Bag closure is achieved by heat sealing with standard equipment. It is strong, an excellent water-vapor barrier, very economical, and can be produced in a variety of sizes. It is also easy to reclose for temporary protection of unused portions.

Crown Dri-Pak bags filled with Simplot instant potato granules were placed in the "tropics room" of the San Leandro Laboratory, R. H. 90% and temperature 100°. Ninety days later, the sample showed *only ½% moisture gain*—and no trace of discoloration or flavor damage. These tests clearly indicated that the Crown Dri-Pak bag was the answer to this packaging problem.

Two bag sizes were adopted—3# and 10#—to provide maximum convenience to customers. Most small restaurants use the contents of the 3# bag (75 servings) at one time. If there are leftovers, the dead-folding properties of the foil allow the bag to be folded over snugly for further protection. Larger institutions find the 10# bag suits their daily needs.

The new package is economical: 3# bags, packed twelve to a shipping case, result in combined packaging and shipping savings of $17.80 per ton of product. The larger 10# bags, packed four to a case, reflect a savings of $28.70 per ton of product. In addition, the bag is easy to open, handle, and reclose; less storage space is required (see photos above) and empty bags are more easily disposed of than tin cans. And as a "bonus extra," Simplot now benefits from strong brand identification from each unit—for each bag is printed in red and blue on a sparkling white background.

This case history is another successful packaging application of an extremely hygroscopic product in Crown Dri-Pak Bags.

The personnel and services of Western-Waxide's Packaging Research and Development Laboratory can turn packaging problems into profits for you! Write or phone your nearest Western-Waxide office today.

*Dri-Pak is a trade mark of Crown Zellerbach Corporation.

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DAIRY HANDBOOK AND DICTIONARY *by Professor J. H. Frandsen. Published by J. H. Frandsen, Amherst, Mass. 1958. 843 p. Price:* **$9.75.**

The result of 50 years of experience in dairy industry instruction, this handbook is a valuable desk reference for the dairyman. . .

Essential information on all phases of dairy work are arranged in four sections: a handbook section containing authoritative articles on most of the important phases of the dairy industry; a reference section containing formulas and tables, a dairy dictionary section, and an advertising section giving information regarding important types of equipment, supplies, and materials available.

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CLASSROOMS IN THE FACTORIES *by Harold F. Clark and Harold S. Sloan. Published by Associated College Press, 32 Washington Place, New York City 3. 1958. 139 pages. Price:* $3.75.

Book is a report of the educational activities carried on by approximately 500 of the nation's largest companies (dollar sales). It reviews the origin of corporation educational activities, surveys their extent and nature, and analyzes the subject matter with which they deal.

The report is strictly factual with no evaluation or criticism of any kind presented.

Newest Enzymology Volume

ADVANCES IN ENZYMOLOGY *(Volume 19). Edited by F. F. Nord. Published by Interscience Publishers, Inc., 250 Fifth Ave., New York City 1. 1957. 457 pages. Price:* $9.85.

Latest in a complete and authoritative series, dealing with developments in enzymology and related fields, this work offers papers by leading researchers in the fields.

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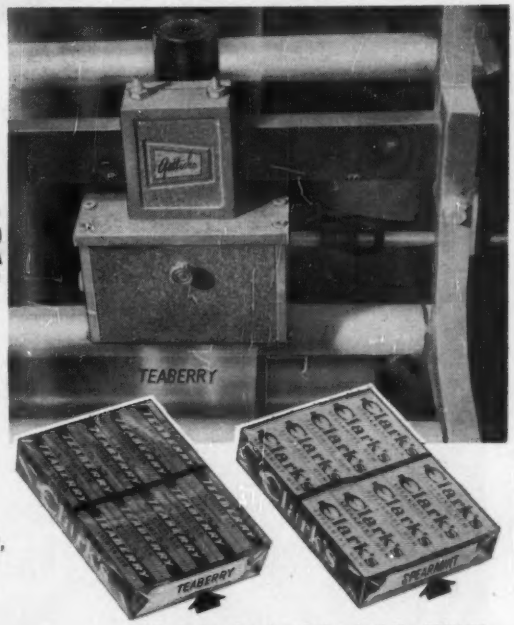

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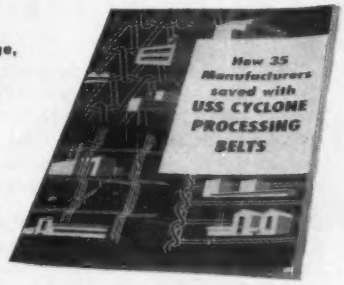
USS Cyclone Metal Conveyor Belt

keeps the shrimp boats a'coming . . . speeds up unloading operations!

Because speed is vitally important in the handling of shrimp to guard against spoilage, many docks are equipped with Cyclone Flat Wire Conveyors. These belts unload the shrimp from the boats, carry them through washing operations and speed them to the freezing compartments—without delays or interruptions.



More details on this time- and money-saving story are reported in the Cyclone booklet, "How 35 Manufacturers Saved with USS Cyclone Processing Belts." Send coupon for your free copy.

Five Basic Belt Types—Cyclone Fence makes the greatest variety of belts in the industry—spiral woven chain drive, spiral woven friction drive, flat wire friction drive, flat wire sprocket drive and flex-grid. They are available in a variety of metals, alloys and finishes. They are strong, sturdy, highly resistant to the effects of chemicals, oils, water or temperatures. Their open-mesh construction makes them readily cleaned and sanitary—permits good circulation of air or heat.

USS and Cyclone are registered trademarks

Cyclone Fence Dept.
American Steel & Wire
Division of
USS United States Steel

Manufactured at Waukegan, Ill. and Oakland, Calif. • Sales Offices, Coast to Coast

WRITE FOR BOOK
Cyclone Fence, Dept. H128, American Steel & Wire, Rockefeller Bldg., Cleveland 13, Ohio

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What can you learn from a Quaker cereal sample?

You'll see a finished product of the highest quality in any one of the standard cereal products listed below, or from products tailored to your own specific requirements. But this is only half of the story, because doing business with Quaker offers many other hidden advantages:

1. The quality in a Quaker cereal sample is not just for "sampling" purposes. It represents standard mill run, and Quaker's outstanding quality control means that sack after sack, or carload after carload, you can always depend on the same conformity to specified standards.

2. Quaker can sample you in all varieties of grains—because Quaker mills all types. And for this same reason Quaker is in an exceptionally good position to give you helpful and unbiased advice on the types and grades of milled products for your particular needs.

3. Quaker's milling is backed by the finest technical research in the newest and most modern laboratory in the milling industry. Here Quaker customers can benefit from the application of the latest techniques to their own specific problems.

Whatever your processing problem, it will pay you to get better acquainted with Quaker products. For samples of cereals in which you are interested, write or phone The Quaker Oats Company, Industrial Sales Department, Merchandise Mart, Chicago 54, Illinois.

QUAKER

Quaker Standard Dry Milled Items

- **Oat Products**
  OATMEALS.....6 sieve sizes
  ROLLED OATS.....11 flake sizes
  OAT FLOURS.....8 types
- **Wheat Products**
  INDUSTRIAL FLOURS
  FARINA
- **Pre-Mixing Services**
  AVAILABLE (to your specs)
- **Rice Products**
  FLOURS
- **Barley Products**
  PEARLED BARLEY..7 sieve sizes
  BARLEY FLOURS (including one in which the enzymes have been inactivated)
- **Corn Products**
  (all electrostatically cleaned—then water washed before milling)
  MEALS.....White & Yellow
  GRITS.....White & Yellow
  FLOURS.....White & Yellow

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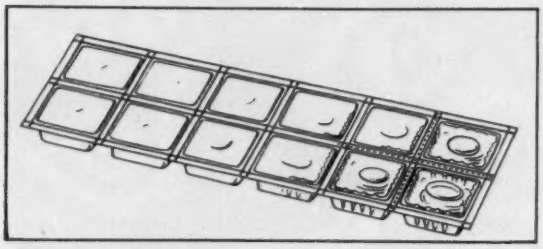

Shell-less Eggs Gas-Packed in Plastic Container Under sterile conditions, egg mass is removed from shell and filled into compartments of impervious plastic container. Latter is then sealed in atmosphere of carbon dioxide.—*L. B. Darrah to Cornell Research Foundation, Inc., Ithaca, N. Y. No. 2,858,224, Oct. 28, 1958.*

PRODUCTS

Compressed Cream Tablet Containing Milk, Butterfat, Carbohydrates, Protein—H. S. Brochner, Copenhagen, Denmark. No. 2,839,407.

Fish Preservative Consisting of Water-Soluble Hydrocolloid, Aqueous Salt Solution—A/S Protan, Drammen, and O. Helgerud, Oslo, Norway. No. 2,839,410.

Cold-Water-Soluble Gelatin Made by Spray-Drying of Aqueous Gelatin-Sugar Solution—Louis Milani Foods, Inc., Los Angeles. No. 2,841,498.

Yeast Adjunct for Shortening Fermentation Time of Leavened Products—G. A. Jeffreys, Salem, Virginia. No. 2,842,442.

Soy-Protein Whipping Composition Comprising Enzyme-Modified Soy Protein, Gelatin, Water-Soluble Polyphosphate, Sodium Aluminum Sulfate—Gunther Products, Inc., Galesburg, Ill. No. 2,844, 468.

Pressurized Salad Dressing Consisting of Fat Particles, Edible Emulsifier and Acidifying Agent—D. Melnick, Teaneck, and J. Akerboom, Bridgeton, N. J. No. 2,844,469.

Pressurized Food Dressing Comprising Emulsion of Fat Particles, Water-Soluble Protein-Containing Pasteurized Egg Yolk Material—Best Foods, Inc., N.Y.C. No. 2,844,470.

PROCESSING

Electrostatically Separating the Components of Thinly Distributed Stream—Quaker Oats Co., Chicago. No. 2,839,189.

Activating Grain Flour With Malt Flour—C.-L. Processes, Inc., Wilmington. No. 2,841,497.

Poultry-Trussing Method—Armour & Co., Chicago. No. 2,842,443.

Measuring Butterfat Content of Milk Photoelectrically—E. M. Borg, Seattle. No. 2,844,067.

Separating Honey From Wax—C. I. Everett, Wellington, Nevada. No. 2,844,253.

Adding Urea Ascorbate to Dough During Kneading—Union Carbide Corp., N.Y.C. No. 2,844,467.

Comminuting and Dehydrating Food Simultaneously by Agitating Frozen Pieces With Dry Hygroscopic Food Powder—E. J. Rivoche, Wash., D. C. No. 2,844,476.

EQUIPMENT

Stem Separator for Raisins Comprising Vibrating Screen With Product-Size Openings—M. N. Musgrave, Seattle, Wash. No. 2,825,454.

Cleaning System for Beverage Lines—R. J. Gatz, Milwaukee. No. 2,826,070.

Doughnut Proofer Comprising Frame, Horizontal Guide Channels, Trays, Pusher Bars, Carriers—J. F. Hewitt, Portland, Oregon. No. 2,838,162.

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Candy-Cane Forming Machine Consisting of Frame, Horizontal Hollow Cylinder, Mandrels, Rope Cutter—J. D. Fine, Oklahoma City, Okla. No. 2,839,014.

Wax Coater for Foods Employing Rotating Cylindrical Brushes, Wax Reservoir, Rotary Applicator—S. C. Johnson & Son, Inc., Racine, Wis. No. 2,839,024.

Cream Destabilization System—Cherry-Burrell Corp., Chicago. No. 2,839,277.

Automatic Doughnut Cutter Comprising Vertically Reciprocating Sleeve, Bell Crank, Actuating Means—W. O. Giles, Orlando, Fla. No. 2,840,012.

Orientators for Seamed Indented Fruit—S & W Fine Foods, Inc., San Francisco. No. 2,840,221.

Poultry-Leg Boning Unit Having Cylindrical Rolls, Flexible Studs, Leg-Carrying Element—Campbell Soup Co., Camden, N. J. No. 2,840,849.

Batch-Type Butter Churn Employing Cylindrical Drum, Spiral Vanes, Tubular Baffle Arranged for Cooling—H. L. Solie, Minneapolis. No. 2,840,908.

PACKAGING

Filling Single-Aperture-Mouth Containers With High-Pressure Gas—T. J. Bagarozy, Elizabeth, N. J. No. 2,845,761.

Metal-Foil Packaging Unit Comprising Rotatable Crosshead, Roller, Plow—F. R. Doherty, Birmingham, Mich. No. 2,845,765.

Oleaginous Food Package (Hermetically Sealed) Consisting of Inner Cardboard Protective Member, Multi-Ply Moisture-Impermeable Overwrap.—Reynolds Metals Co., Richmond, Va. No. 2,848,336.

Packaging Ice Cream by Folding Unitary Cardboard Blanks Into Open-Ended Channels, Filling, Closing, Hardening—J. Lyons & Co., London, England. No. 2,848,337.

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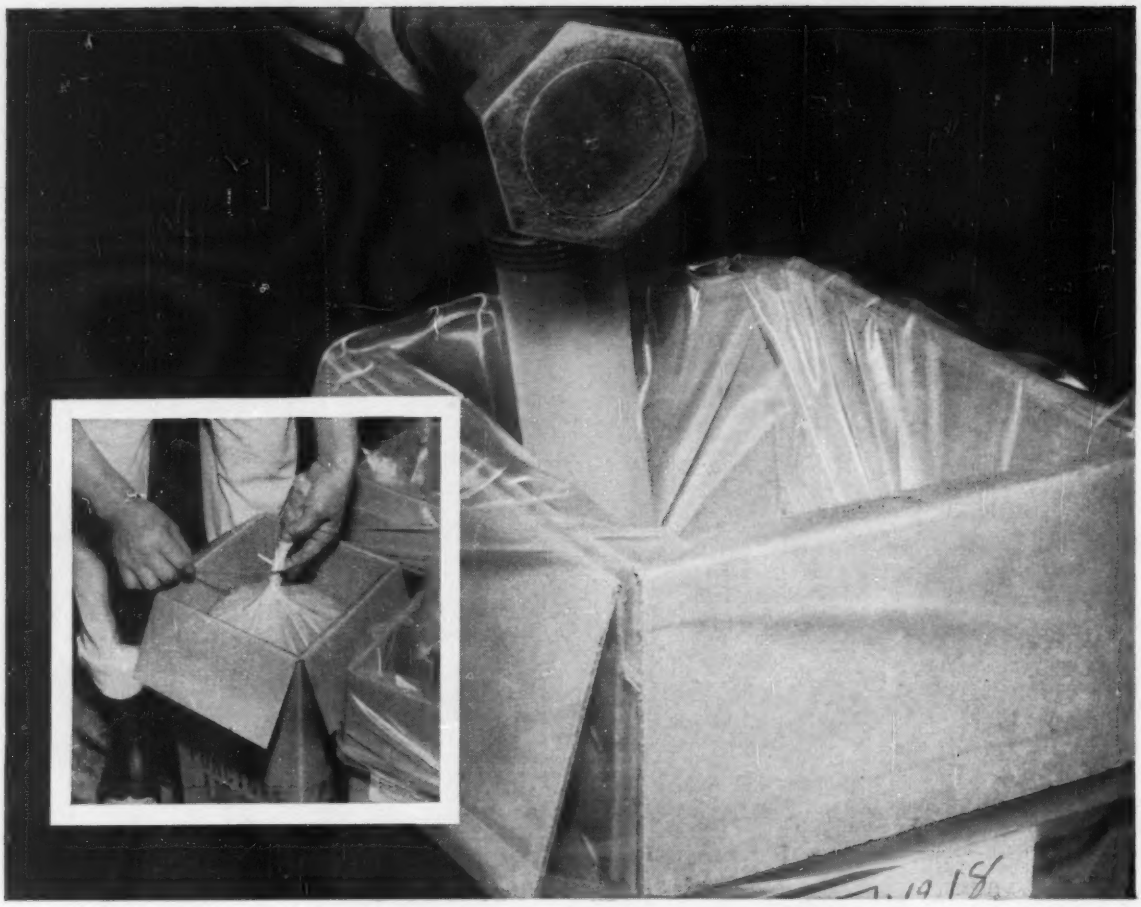

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in cartons lined with polyethylene film

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Hundreds of different food products are now being packaged successfully, and at lower cost – in film made of BAKELITE Brand Polyethylene. To learn the practical ways polyethylene can benefit you, contact your supplier or write Dept. LT-86M, Union Carbide Plastics Company, Division of Union Carbide Corporation, 30 East 42nd Street, New York 17, N. Y. *In Canada:* Carbide Chemicals Company, Division of Union Carbide Canada Limited, Toronto 7.

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POSITIONS VACANT

Instrument and Controls Application Engineer. Graduate Chemical Engineer with two to five years experience with the food processing industry. Should be familiar with several branches of the food industry. Will locate in Columbus, Ohio and travel to customer plants. Interesting and challenging work in nucleonics, electronics and automation. Send resume in confidence to: Employment Manager, Industrial Nucleonics Corporation, 1205 Chesapeake Avenue, Columbus 12, Ohio.

Flavor Chemist Wanted. Leading essential oil firm expanding staff. Good opportunity and sound future for qualified man with thorough knowledge of materials, and experience in research and development. Above average, fully paid employee benefits—including hospital, surgical, major medical and retirement plan. Send details regarding experience, education, personal data and salary requirement. P-9164, Food Engineering.

Wanted—Man with experience in pickle production processing and sweetening to work in modern pickle plant located in middle west. Give all pertinent information when answering. P-9327, Food Engineering.

Flavor Chemist, free lance with own facilities, to match samples for midwest flavor house. Will pay well for successful results. P-9437, Food Engineering.

SELLING OPPORTUNITY OFFERED

Technical Service Representative: Nationally known food company has requirement for aggressive, personable Food Technologist or Food Chemist for technical service. Work will include sales liaison responsibility requiring knowledge of all phases of food manufacturing. A background of from 1 to 3 years experience in food industry preferred. Background in baking, confectionery or allied fields desirable. Firm located in New York City. Salary commensurate with qualifications and experience. Replies held confidential. Send resume outlining specific experience and education to: RW-9438, Food Engineering.

EMPLOYMENT SERVICE

Salaried Personnel $5,000-$30,000. This nationwide service successful since 1927 finds openings in your field. Sells your abilities; arranges contacts. Present position protected. Write for details—Jira Thayer Jennings, P. O. Box 674, Manchester, Vt.

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Manufacturing Executive Experience—Plant Manager supervising production, production control, plant engineering, quality control. Complete control Branch plant. Strong on Cost Reduction. M.I.T. Grad.—43 yrs. old PW-9180, Food Engineering.

Power Plant Engineer, age 39, BS in Elec. Eng., 10 yrs. experience in operation, maintenance and redesigning of large industrial electrical distribution system, 3,000 ton refrigeration system, medium pressure boilers and turbogenerator with pulverized coal, gas and oil firing. PW-9350, Food Engineering.

Technologist—Specialization in Meat and Dairy Field. More than 20 years experience with the handling of foods which includes teaching at college level. Hold 2 college degrees related to the food field. Would consider any type of position in this line commensurate with experience. Southern half of U. S. preferred. PW-9252, Food Engineering.

Food Technologist M.S. with extensive experience in all phases of pickle manufacturing desires position in management or sales of pickle products or related fields. PW-9436, Food Engineering.

CONTRACT WORK WANTED

We have facilities in Indiana and Illinois available for roll and spray drying of food products. Crystal Dairy Products, Watseka, Illinois.

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For lease or sale, Former ice cream plant on main highway, 7000 sq. ft. on one floor. Built in 1949. Two freezer rooms, 65 tons of refrigeration. Good for food distribution or processing plant. Sweetlands; 2702 Fenton Rd., Flint 7, Michigan.

CHIEF ENGINEER

Multi-plant Canadian food processing Company with head office in Ontario requires Chief Engineer.

Qualifications — graduate engineer—approximately 15 years practical experience in food or beverage processing—ability to supervise staff and handle changeover projects, plant layout, general maintenance, etc. State full particulars and salary required in reply.

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Graduate food technologist—minimum 5 years industrial research & development experience and field work. Chemical Co.—Central N. J. location. Write education, experience in detail.

P-9335, Food Engineering
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New Frozen Specialty—In response to ever increasing need and demand food research chemist has developed new formula and process that produces high protein, non-fat, frozen product, having attractive appearance of ice cream. Palatable, quick pick-up, low cost. Patent pending. Produced on ice cream plant equipment. Exclusive license for all or part of U. S. available on royalty or outright basis to organization qualified to mix, package and distribute to trade. Write inventor fully. BO-9065, Food Engineering.

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For lease—Complete vegetable and strawberry processing plant, and other modern processing machinery, including Package Machinery Corp. automatic wrapping machine, all housed in modern building located in center of industrial section of Central Arkansas. Quick Freezing Plant with 40 Tons daily capacity at —30°, and Cold Storage Warehouse with capacity of 300,000 cubic feet located on property and available for use. Railroad siding and truck dock available. For details write FL-6424, Food Engineering.

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Applicant must be top level production manager familiar with a large plant operation, know modern supervisory techniques, efficient production scheduling, and have a profound respect for the operation of a $4,000,000 modernly equipped bakery.

Our company produces the finest line of quality cakes and Danish in the industry. We are independently owned—located in the midwest and not affiliated with a chain bakery operation.

All replies will be held in strict confidence. Please send complete details and earning history in first letter.

P-9333, Food Engineering
520 N. Michigan Ave., Chicago 11, Ill.

WANTED
CAN PLANT

A complete sanitary can plant or can making equipment for export to South America. Write to C. A. Industrias Chaimas Edificio Collmodid 5 Piso, Oficina 53—Este 2, El Conde, Caracas, Venezuela.

WANTED
RIBBON TYPE BLENDER

Approximate 100 gal. capacity, contact parts of stainless steel, steam jacketed to withstand 25 lbs. steam.

W-9388, Food Engineering
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WANTED

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Dryer: Nordyke-Marmon 120 bu.
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Fillers: liquid; vacuum, siphon, gravity.
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Filters: Rotary Vacuum—Eimco, Oliver, Bird.
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Other sizes with and without agitators.
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Labelers: Burt Knapp, New Jersey, World. World Box Line, N. J. series 300 thermoplastic.
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Mills, colloid: Charlotte 20 hp., 1 hp.
Mixers, dough type: single and double arm.
Glen Power Plus 340-qt. 5 hp.
Powder: 50 to 2000 lb. capacity.
Day high speed 40 hp.
Buffalo #5 st. st. vacuum, 15 hp.
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1—**Niagara** #30-30, vert., 76.8 sq. ft., T304 ss, Jktd.
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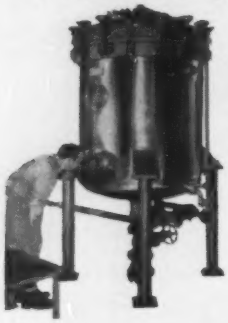

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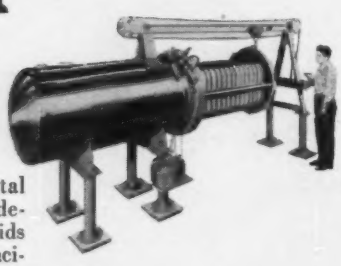

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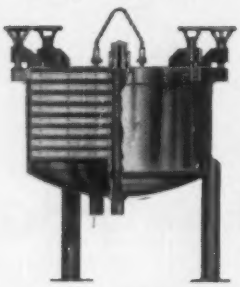

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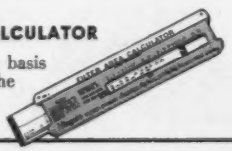

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